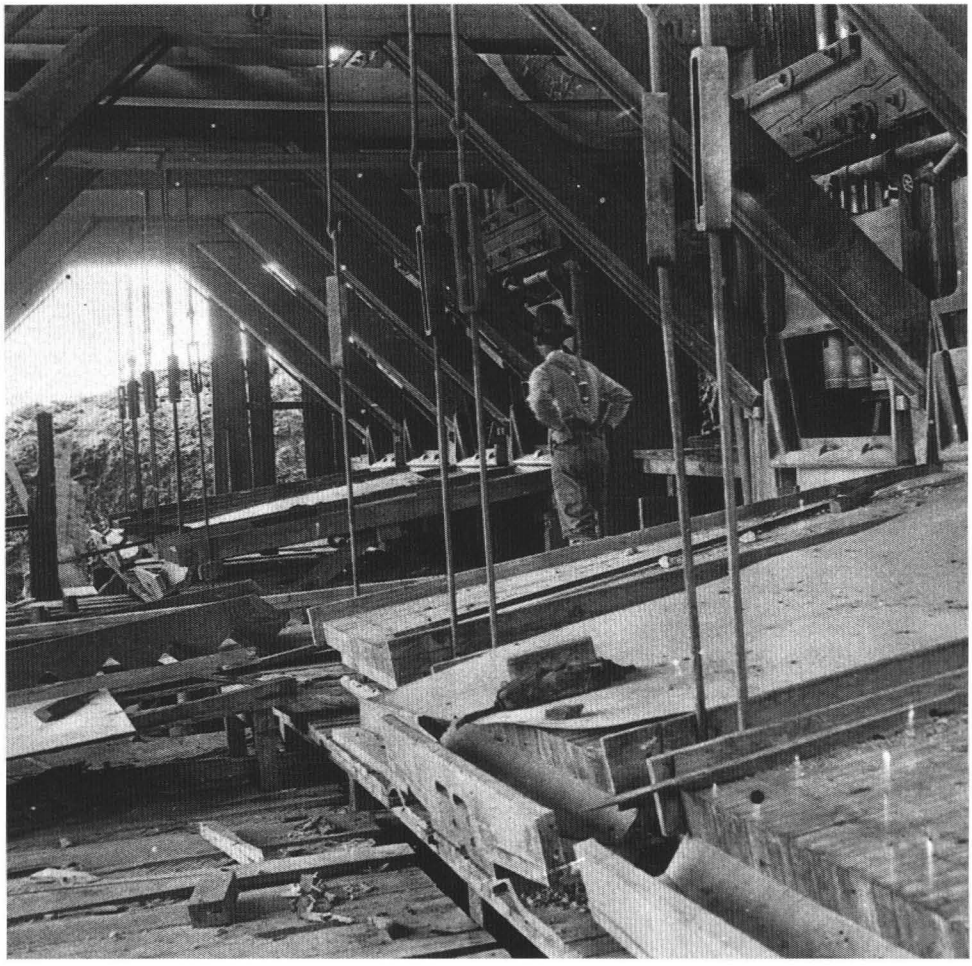
Nevada
Historical Society Quarterly



Fall 1997

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. 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. Correspondence concerning articles and essays is welcomed, and should be addressed to The Editor.

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Nevada
Historical Society Quarterly

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Front Cover: Gold Mountain, Nevada State Line Mill *(Nevada Historical Society)*

Book Reviews

CONNECTING THE CONTINENT
Esmeralda County, Nevada and the Atlantic and Pacific Railroad Survey of 1853

Paul F. Starrs

The year 1853 saw a watershed event in the annals of Great Basin exploration and discovery. Its significance is almost perfectly equalled by a modern-day obscurity, which is alas more typical of the history and geography of Nevada than many would care to admit. The event was relatively simple: Three principals and a support echelon of additional men and animals crossed the Sierra Nevada into the western Great Basin desert, searching out a viable route for an eagerly — even feverishly — anticipated transcontinental railroad. In the process, they turned an important corner, contributing a detailed body of information about western Nevada in diary accounts, manuscript maps, and engineering surveys. Just five years after the last of the pathmarking trips of John C. Frémont and Charles Preuss, and fully twenty years before the Great Surveys of the 1870s, this expedition was a first attempt to gather detailed topographic information about western Nevada.[1] And maybe most significant, it was financed not by Congress or the United States Army, but instead by private investors, a consortium of railroad-hungry California entrepreneurs, desperate for a rail route into the Golden State.

What arose was the Atlantic & Pacific Railroad Survey, a concerted effort to add to the scientific knowledge of the western Great Basin for wholly commercial reasons. That what was learned would languish in almost complete obscurity for more than 140 years says something about the evolving fashions of geographical history — but what these expeditionaries concentrated upon, and what they did capture and record, speaks volumes about the concerns, ideas, and visions of progress at the mid-nineteenth century. The small scouting party included anonymous packers, their stock, and a distinguished leadership of three: John Ebbetts, Army Lieutenant Tredwell Moore, and George Henry Goddard. From Walker Lake to the edges of Sarcobatus Flat just northeast of Death Valley, they completed a careful traverse of what in eight years would be

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designated Esmeralda County, Nevada (Map 1).[2]

With the country ahead all but unknown in 1853, maps of the day were of little help. Except for the generalized Frémont-and-Preuss Great Basin maps of 1845 and 1848, there were simply no trustworthy maps to be had.[3] When John Ebbetts left Stockton, his plan had been to return to California only after reaching the meadows of Las Vegas de Santa Clara, along the Virgin River on the Old Spanish Trail, somewhat north of present-day Saint George, Utah. Las Vegas de Santa Clara was a common rendezvous for western explorers, and sometimes spoken of as a possible junction point for lines meeting a westbound transcontinental railroad. Although the survey party came only briefly within 300 miles of Las Vegas (later La Verkin), Ebbetts counted the expedition a success anyway. Explorations were broken off in mid-November 1853. Wearied by the desert and flirtation with disaster, Ebbetts brought his party safely back to San Francisco. Stopping short of the Virgin River, they were nevertheless satisfied that they had met the objective of scouting an adequate railroad route across the central Nevada wilderness.

Aspiring to the Unknown

At mid-century, San Francisco was embraced by multiple enthusiasms, among them the hard grip of railroad fever. The California Gold Rush was on, and because the gold towns needed supplies from the eastern United States, transportation posed a major limitation to growth. Although fortune-seekers arrived in California by boat or wagon, on horseback or on foot, heavy goods could come only by sea, either around Cape Horn or after transshipment across the Isthmus of Panama. The cost was high, transportation slow. Bringing pumps, iron, and equipment to California was difficult enough, but the country east of the Sierra was still less accessible. Under markedly different conditions, railroads in the eastern United States had already been proven feasible and profitable. It was with impatience that westerners on the Pacific slope waited for the railroad to begin its march across the Great Plains.[4]

A California state Senate committee in March 1853 attempted to excite the interest of financiers in building a railroad. It was taken for granted that only one important question remained unanswered—not whether or when the railroad would come into California, but how. Meeting in the Masonic Hall at the state capital in Benecia, the California Senate was at a crucial juncture. Finished was the era in which what was known about the West was simply the collected ideas and discussions of the so-called mountain men. John C. Frémont, and especially his cartographer, Charles Preuss, had inaugurated a new phase in the late 1840s, with measurement and science replacing anecdote and assumption.[5] But how that era of science would benefit the State of California remained to be seen. Frémont had strongly endorsed an indistinct railroad route across the central Sierra massif in 1850, but the lack of meaningful details guar-

A nineteenth-century view of Ebbetts Pass, looking back down the canyon of the West Fork of the Carson River (*Nevada Historical Society*)

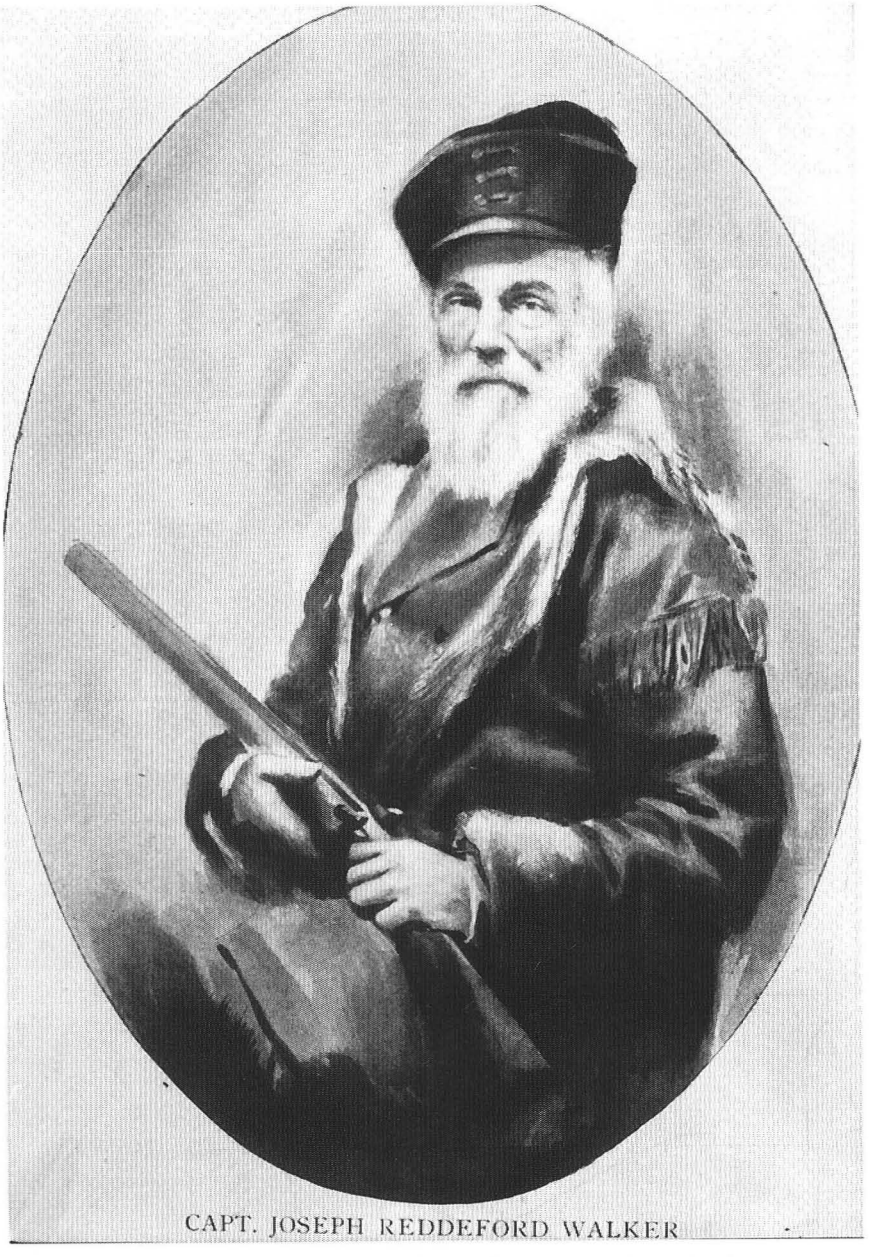
anteed that further studies would be in the works.

The California Senate Committee on Public Lands was taking testimony from Captain Joseph R. Walker, "retired" mountain man and the most prominent resident of Gilroy. Walker argued that the southern Sierra's Walker Pass was the only practicable route, since from there north, "the Sierra Nevadas mountains to the Oregon line presents one unbroken chain . . . rendering an insuperable barrier to a Railroad passing over or through them." Walker's conclusion would largely jibe with the elaborate study of possible routes for the Pacific Railroad that had been funded by Congress in 1850, but was not completed for another five years. There had been general talk of transcontinental rail lines following the main parallels of latitude. For largely political reasons, in the national Pacific Railroad Survey every route save one was sketched to the north, near Honey Lake as it reached the Sierra–Cascade ranges. The mountains there were less formidable, and the alternative southern route into California also carefully avoided the Sierra Nevada's precipitous east face by entering the Central Valley over Tehachapi Pass.[6] It would eventually befall Lieutenant E.G. Beckwith in 1854 to formally recommend only a northern route to California, near the forty-first parallel along the Pit River.

These studies offered little solace to California entrepreneurs who were convinced that politics, and not topography and engineering, was dominating the national movement toward railroad planning. For them, the problem was simple: Southern California in the 1850s was sparsely populated and barely more than a wasteland. Railroads entering the State through the south meant that the expectant merchants of San Francisco, Stockton, Sacramento, and other booming inland towns would have to wait for goods to arrive. They elected to pay for their own survey, gambling that a usable route across the Sierra could be found.

With all the interest blossoming from Joseph Walker's testimony, it was only a matter of months before a group of northern California businessmen met in San Francisco on August 24, 1853, to form the Atlantic and Pacific Company.[7] The company's avowed purpose was to pay for scouting a route over the Sierra, then, to build a railroad. Assessments were levied, and in an astonishingly short time, two expeditions were chartered: The first party, paid $2,500 up-front for its work, left Stockton on October 7 to search for a railroad route east to the Virgin River. If the second party ever mustered, it left no records.

Directing the survey was a man with nearly as much stature as Captain Joe Walker. Major John Ebbetts (the rank was honorary, but accepted) was a renowned mountain man who in 1851 had established the utility of the Sierra pass named after him. Ebbetts's deputy and the expedition's chief engineer was Lieutenant Tredwell Moore, a West Point graduate on leave from the Second United States Infantry Regiment at Fort Miller, near Fresno. If Ebbetts was recognized as a veteran backwoodsman, Moore was at least well seasoned by virtue of his travels at the eastern foot of the Sierra. Together, Ebbetts and Moore



Captain Joseph Reddeford Walker *(Nevada Historical Society)*

had crossed the Sierran cordillera on an 1851 trip. Returning in 1852, Moore chased down a group of Miwok Indians and, in the same trip, discovered the Mono Basin.[8] Hired on as assistant engineer was George Henry Goddard, at the time unknown, but author in 1857 of the superb Britton & Rey's *Map of the State of California* (and Nevada), which even today is widely regarded as an aesthetic masterpiece of cartography (Map 2).[9] Each of the principals left an immediate record of the survey: Goddard, several maps; Ebbetts, a diary published in *The San Francisco Daily Herald and Mirror;* and Moore, a report that he sent to Washington, D.C., where it was eventually lost.[10]

No less important or distinctive was the financing of the Pacific Railroad Survey. Aside from the forays of beaver trappers, most of the survey parties that scoured the West were military, or at least government financed. This expedition, on private subventions, was a minor triumph of San Francisco and Sacramento Valley venture capital. Perhaps a railroad might, as Ebbetts argued in his diary, have surmounted Ebbetts Pass (8,730 feet) and crossed the central Nevada desert to the upper reaches of the Virgin River. What is not speculation but fact is that John Ebbetts had taken his party nearly 300 miles into parts of the Great Basin that no one had adequately described in print before.

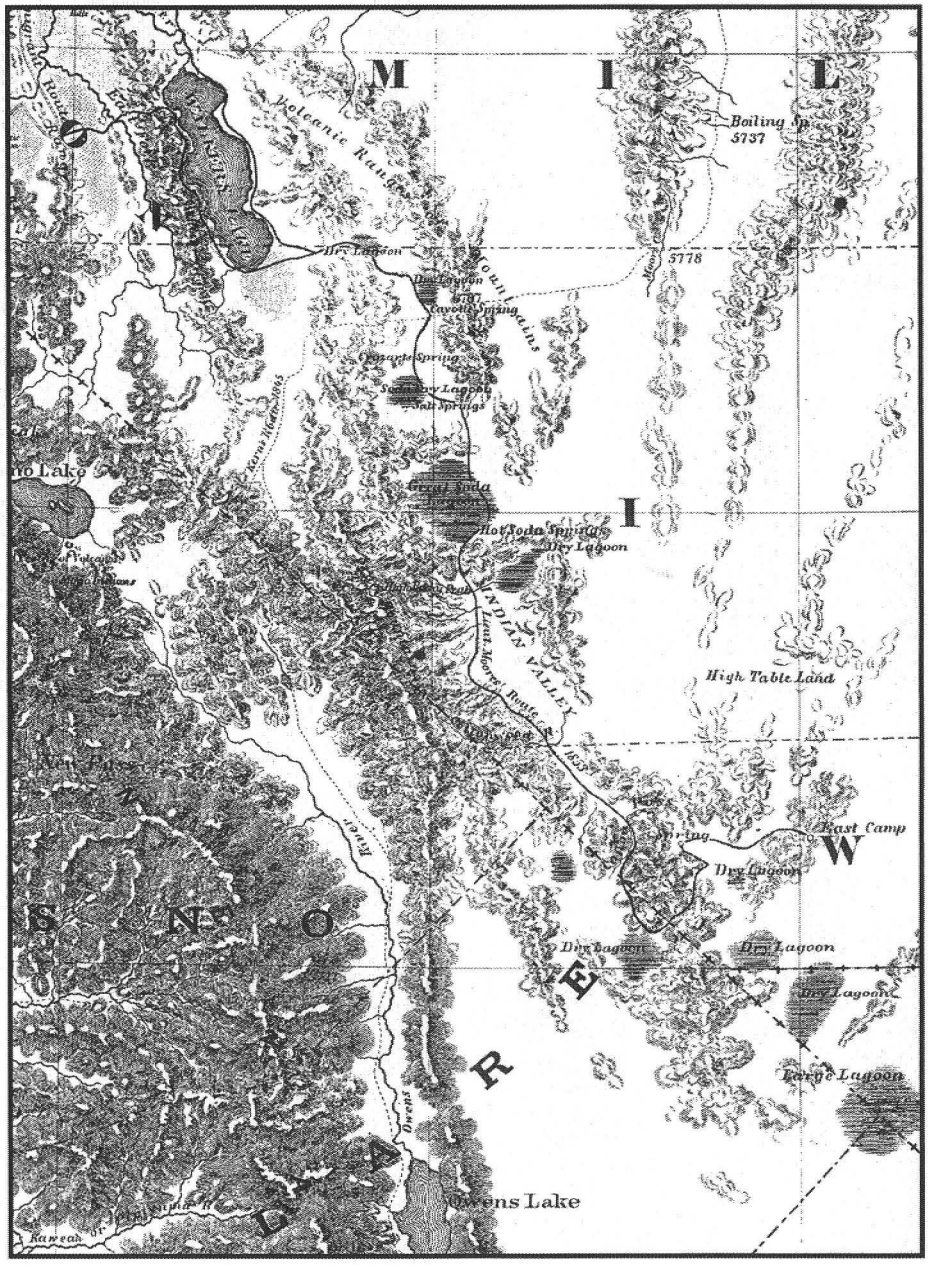
This eastward search for a railroad route remains a distinctive, if generally forgotten, chapter in western historical geography. The year 1853 was crucial. California had gained sufficient confidence to push for an iron lifeline that would firmly connect it to the rest of the nation. Railroad construction technology was sufficiently advanced that even tracks over the Sierra were plausible, and a railroad to California would certainly have altered the character and timing of western development, perhaps even influencing sectional rivalry and the Civil War.[11] There was an interest approaching obsession with the construction of a transcontinental line, neatly captured by northern California resident James A. McDougal, in an August 23, 1853, letter to the San Francisco *Alta*:[12]

> It was prophesied of old that a great country should be built up on this shore to hold the reins of empire on the Pacific, and the greatest step for the complete fulfillment of that is the Pacific Railroad. That road will concentrate the trade of the whole Pacific.

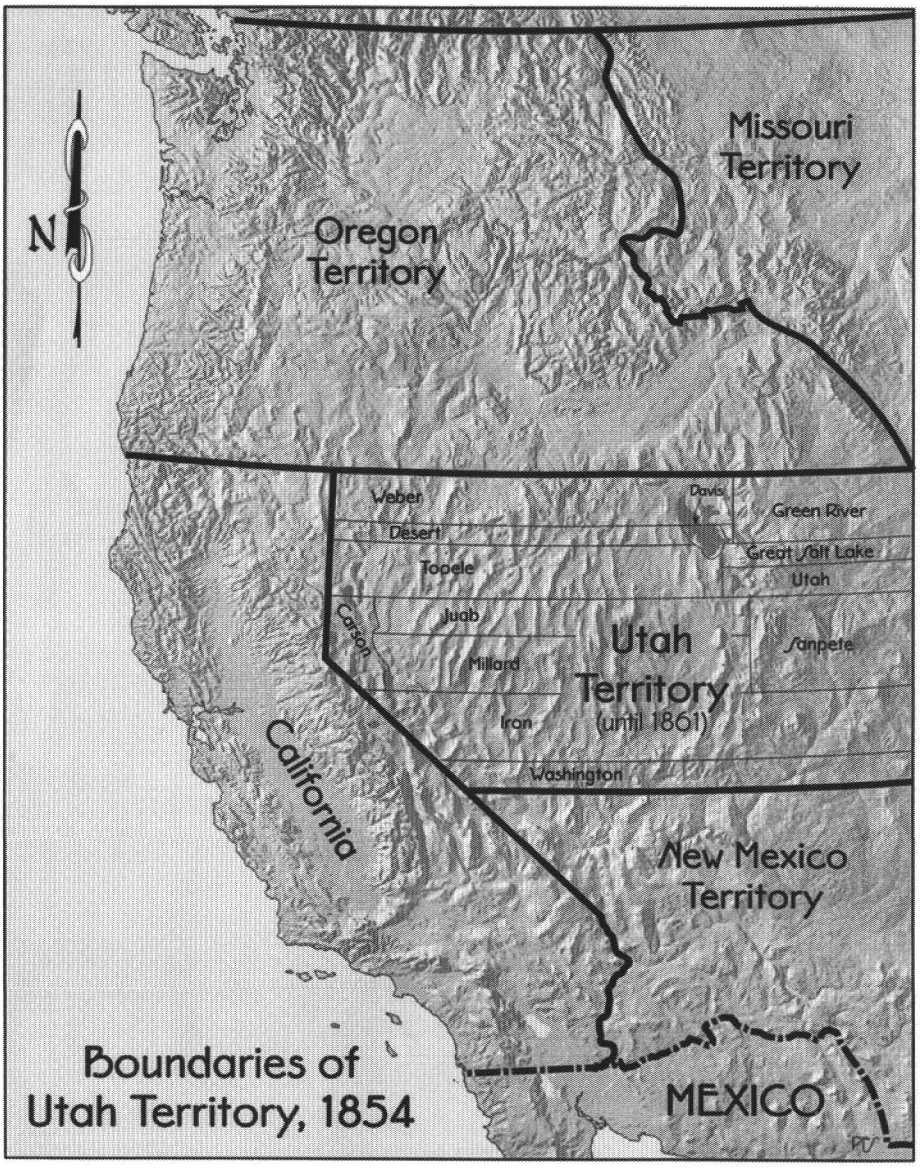
Ebbetts and Esmeralda

There was no Esmeralda County in 1853, only the young Utah Territory, established by act of Congress in 1850. Where California met the intermountain West there ranged a series of Mormon counties, defined by parallels of latitude, that were extended westward in 1852 from the original Utah counties. The State of Deseret was bounded by precisely drawn lines on the rough maps of the time, but one problem was that no one was entirely sure what those lines contained (Map 3).

Having crossed the Sierra Nevada twice before, John Ebbetts and Tredwell Moore were familiar with some of the valleys—Carson, Antelope, Bridgeport—



Map 2 - George Henry Goddard,was the author in l857 of the superb Britton & Rey's *Map of the State of California* (and Nevada), which even today is widely regarded as an aesthetic masterpiece of cartography



Map 3 - Boundaries of the Utah Territory, 1854

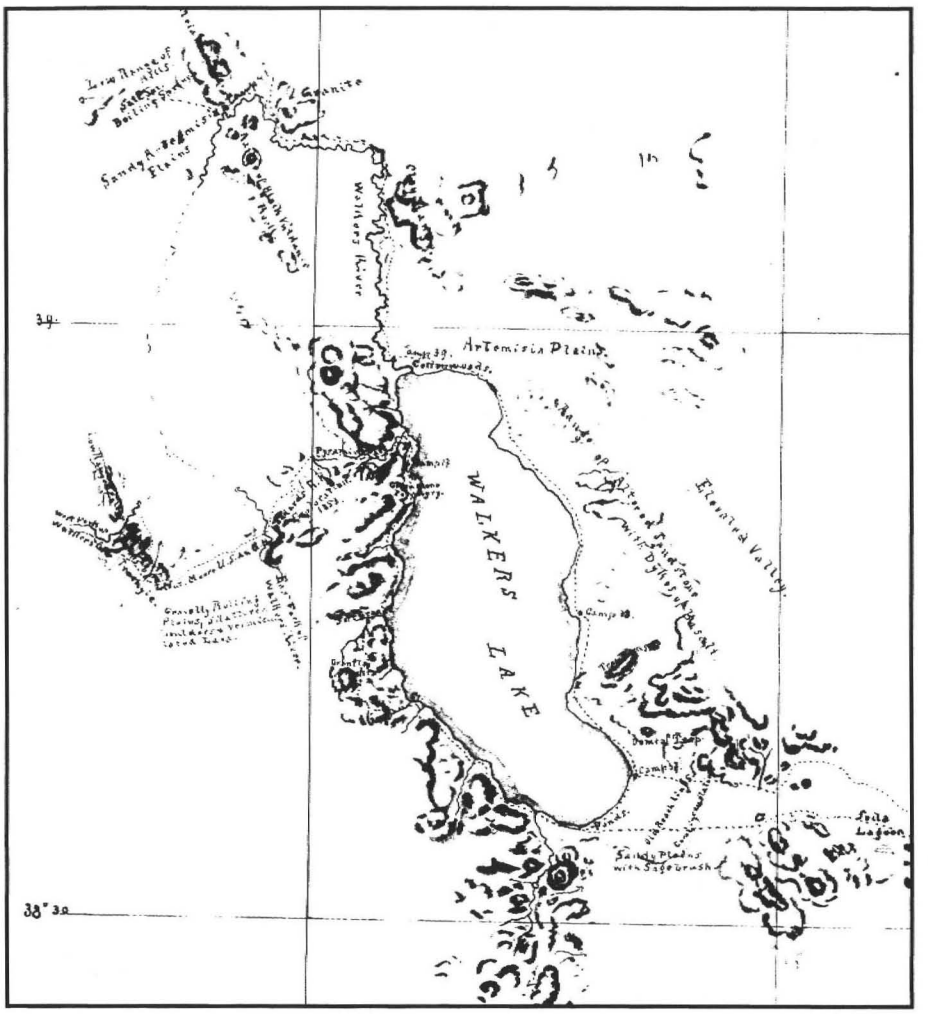
that lay to the east of California's great barrier range. Returning in 1853, they rode deeper, into the Mormon counties of Millard, Iron, and Washington. In name these were to survive the early boom years of the Comstock Lode, but finally, in 1861, the Nevada Territory was severed from the Utah Territory by a Congress perturbed by Mormon polygamy and territorial ambitions and beset with pleas of settlers in the Carson Valley for a separate country of their own. Esmeralda County was created from 10,000 square miles, to extend from well north of Walker Lake to the northern limit of New Mexico Territory, which defined the thirty-seventh parallel in southern Nevada.

Although John Ebbetts was a veteran of travels in the Sonora desert, he found his hands full in what was to become Esmeralda.[13] Departing from Stockton, leaving the Central Valley on their way to the east, the party took the Sonora Emigrant Road, a rough trail through the Sierra used largely because of vigorous (probably unscrupulous, certainly deceptive) lobbying by the citizens of the town of Sonora. They topped the Sierra crest just south of Sonora Pass (9,624 feet), a route by consensus precarious for wagon travel, and not worth discussing as a railroad route. Ebbetts mentions in a diary entry that he pointed out a nearby divide—Ebbetts Pass—to George Goddard as a quicker and more utilitarian route. Their traverse of the Sierra put them at the headwaters of the West Walker River, which they followed to Antelope Valley, to rejoin the eastern half of the Sonora Trail.

After crossing into present-day Smith Valley, the men and their animals pushed east to the East Walker River, which soon met the barrier of the Wassuk Range and turned north (Map 4). Leaving the safety and ease of travel along the river, they went straight over the mountains and dropped to the anthracite-blue-black waters on the west shore of Walker Lake. "Leaving the lake we enter a considerable valley, running nearly east and west," cross sagebrush and scrub, to Soda Springs Valley, an enclosed thoroughfare between the Gabbs and Pilot ranges on the east and the Garfield Hills and Excelsior mountains to the west. Troubles, though commonplace, were accepted:

> [Thursday, October 27] Our stubborn mule has given the packers some concern, falling several times, without regard for personal injuries. . . . The country appears deserted of game, but the many signs of Indian camps accounts for it in some degree. The lake [Walker] abounds with the finest kind of fish, but have no means of taking them. The tracks of deer, antelope, and mountain sheep are plenty.
>
> [Friday, October 28] We are obliged to encamp at dusk, without water, and but little grass. Cook no supper; men as well as mules suffer for water; issue some whiskey, which has not been touched since leaving Sonora. Intend to make an early start. The evening very cold. Distance, about 28 miles.

At the glistening white expanses of salt on Rhodes and Columbus marshes, a route had to be chosen. The initial decision was to swing east, across the old and dissected alluvial fans at the foot of the Monte Cristo Range, and to continue from there into Big Smoky Valley, on course toward what is today Tonopah.



Map 4 - East Walker River, meeting the barrier of the Wassuk Range.

The crucial problem was that it was impossible to know what was coming up, where feed, water, or perhaps even shade might be found. One mountain range hid the next; generally oriented north and south, the mountains of the Great Basin nevertheless sometimes intersected at crazy angles. There was never time to climb and reconnoiter, and in any event, the mountain peaks were an inaccessible mile of rise above the desert valley floors. Without maps or experienced escorts, the only guidelines available to Ebbetts and his colleagues came from intuition and their prior experience elsewhere in desert travel.

Where the Monte Cristo Range gave way to broad Big Smoky Valley, at the southern end of Soda Springs Valley, another difficulty arose. It was obvious that the quickest route was due east, following the route of modern Highway 6

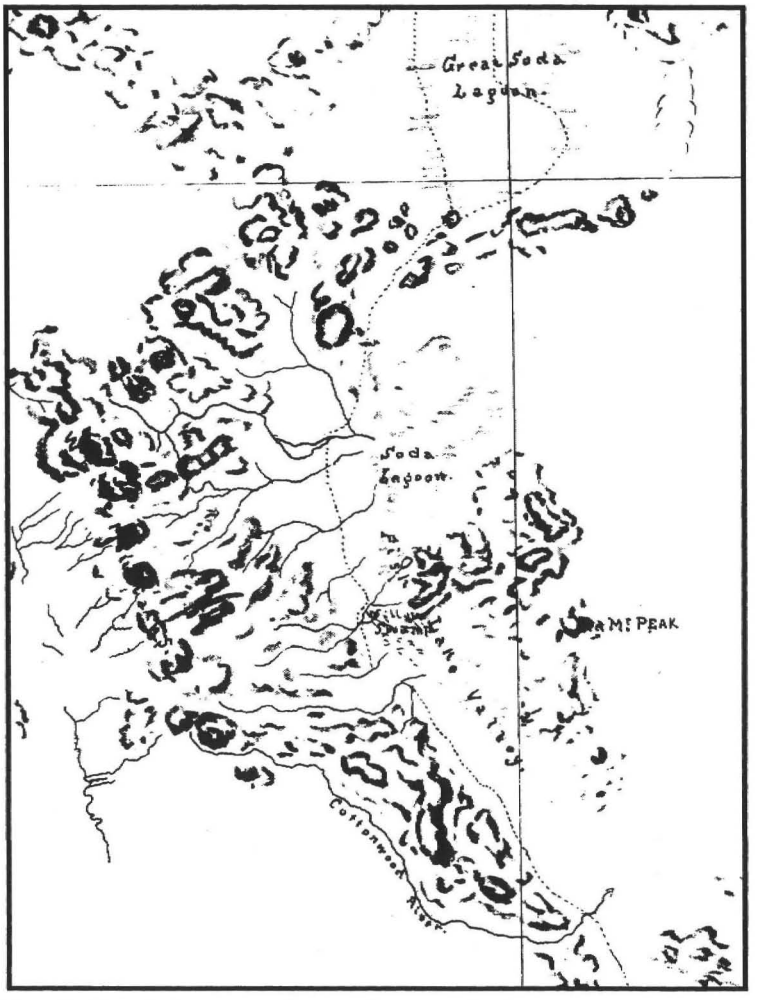
toward Tonopah. There, though, lay country of a "more sterile appearance," which convinced Ebbetts that the group, stretched near its limits, must retreat. They turned south, surrounded by caprock hills of red rock, through The Gap into the northern end of yet another desert valley, where again there was only poor grass and no water. Camp was sober the night of November 1, and for most of the night the mules brayed in distress.

> [Wednesday, November 2] At daylight despatch [*sic*] man for broken down mules; returns before the train is ready to start, and reports his mule dead, the other given out; one improves . . . obliged to go to the southward and westward of our course, to reach the base of the Snowy Mountains.

The Snowy Mountains had been named in 1845 by John C. Frémont, who saw them looming at a distance as he trekked through Big Smoky Valley toward Walker Lake. Later renamed the White Mountains, after the brilliant quartz monzonite of Boundary Peak (13,145 feet), the range was a beacon of snow-capped peaks rising dramatically from the alluvium of Fish Lake Valley to 14,242 feet. The mountains followed a line paralleling the California-Nevada border, and several perennial streams drained into the valley at the eastern foot of the range. Here was a godsend. Ebbetts steered the party to the mountains and the wet piedmont valley below. George Goddard, meanwhile, sketched a map filling in overdue details of the country east of the Sierra Nevada.

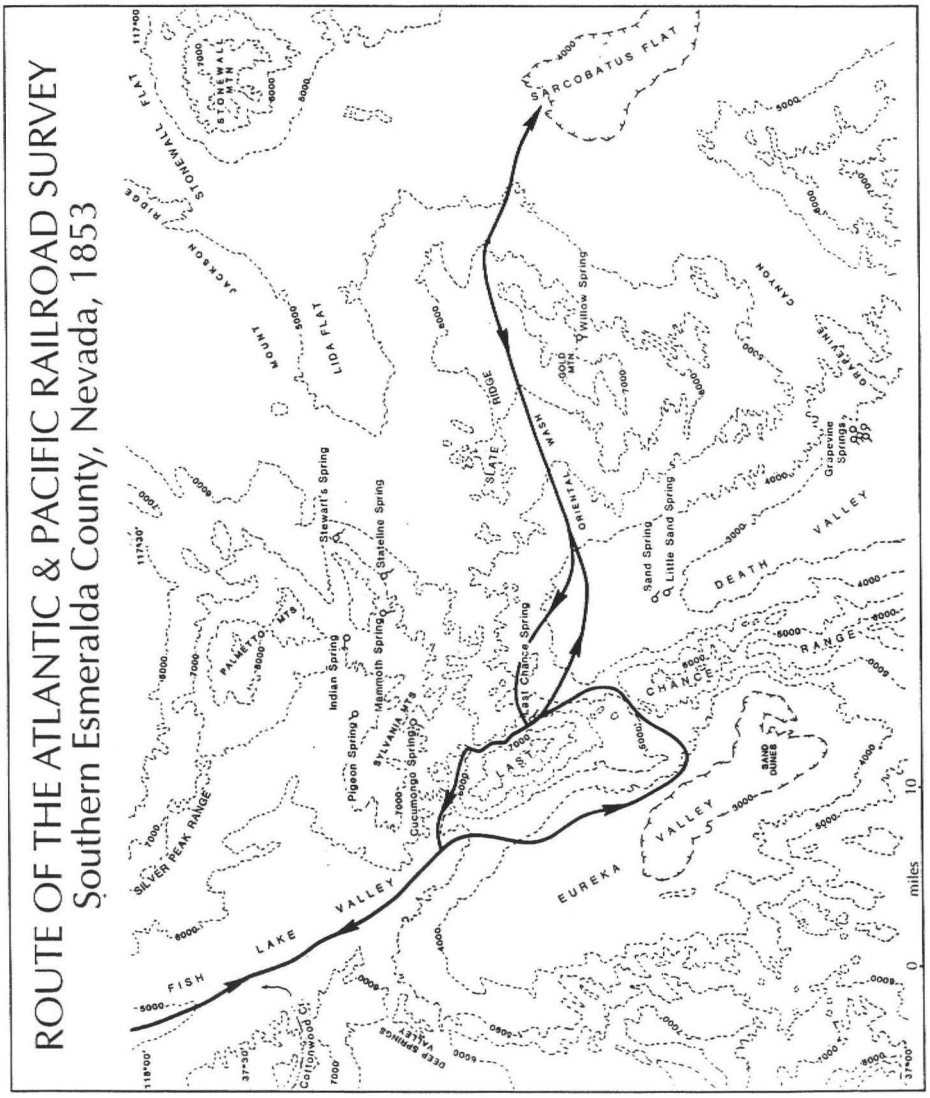
Fish Lake, near the northern end of the valley, was a true marsh boasting ducks and game, tules and open water, not just the brackish ooze capped by black alkali more characteristic of desert sinks (Map 5). The recuperating mules found varied feed. Near the tule-edged water was saltgrass and sacaton; away from the marsh was perennial bunchgrass and saltbrush, and sagebrush and winterfat grew on the alluvial apron. The mountain slopes supported pinyon pine and juniper, paltry by Sierra Nevada standards, but for the desert, fine stands. For four November days Ebbetts's party camped around Fish Lake Valley, allowing the mules to regain weight and strength on good water and "grass of the best kind."

Slowly, they worked south, watching the "numerous fires of Indians near us," and hunting rabbits, deer, and elusive antelope. Once the stock was in decent flesh, Ebbetts left Cottonwood Creek to push on toward Las Vegas de Santa Clara. The southern end of Fish Lake Valley, actually in California, rose and narrowed between the Sylvania Mountains and the Inyo Range. Scarred rock marked where a straight, narrow, high-angle fault steered toward the joshua tree-covered divide between Fish Lake and its southerly neighbor, lower and drier Eureka Valley (Map 6). Like an arrow, the fault directed the survey party southward, but it was an instruction that can only be described as malevolent. Eureka Valley's euphonious name was to prove richly undeserved; George M. Wheeler was more realistic when in 1871 he called the depression Termination Valley in his survey report.[14] Ebbetts and his party were imperiled.



Map 5- Fish Lake, near the northern end of the valley, was a true marsh boasting ducks and game, tules and open water, not just the brackish ooze capped by black alkali more characteristic of desert sinks .

A trail through loose sand led from Fish Lake to Eureka Valley, past dissected badlands of the Esmeralda formation, past multicolored marble in Cucamonga Canyon, away from saltbrush, shadscale, sage, and yucca, away from Fish Lake Valley water and feed, to a different world. Everything hospitable around Fish Lake was missing from Eureka Valley. The wind, wholly uncharacteristically hot for early November, was diabolical, drying without refreshing. At 2,960 feet in mid-valley, sand dunes rose to 700 feet. Where dark, hot, hoof-singeing desert pavement was pocked by vegetation, it was "a green bush which the Gila river abounds with," creosote bush interspersed with


ROUTE OF THE ATLANTIC & PACIFIC RAILROAD SURVEY
Southern Esmeralda County, Nevada, 1853
FISH LAKE VALLEY
SILVER PEAK RANGE
PALMETTO MTS
STONEWALL MTN
STONEWALL FLAT
JACKSON RIDGE
MOUNT
LIDA FLAT
SLATE RIDGE
ORIENTAL WASH
GOLD MTN
Willow Spring
SARCOBATUS FLAT
CANYON
DEATH VALLEY
RANGE
Stewart's Spring
Stateline Spring
Indian Spring
Mammoth Spring
Pigeon Spring
SYLVANIA MTS
Cucumonga Spring
Last Chance Spring
Sand Spring
Little Sand Spring
Grapevine Springs
CHANCE
LAKE
EUREKA VALLEY
SAND DUNES
Cottonwood Cr
DEEP SPRINGS VALLEY
miles
0
10

Map 6

burroweed. The travails were certain and significant:

> [Tuesday, November 8] Conclude to remain in camp all day. Shoot the mule with broken leg, take out the sinews and part of the hides, for making moccasins; most of the men being badly off for boots and shoes; the rocks soon wear them out; and the men are engaged putting tallow and sugar on the feet of the mules, and burning it in, to harden them; we have no more shoes or nails.

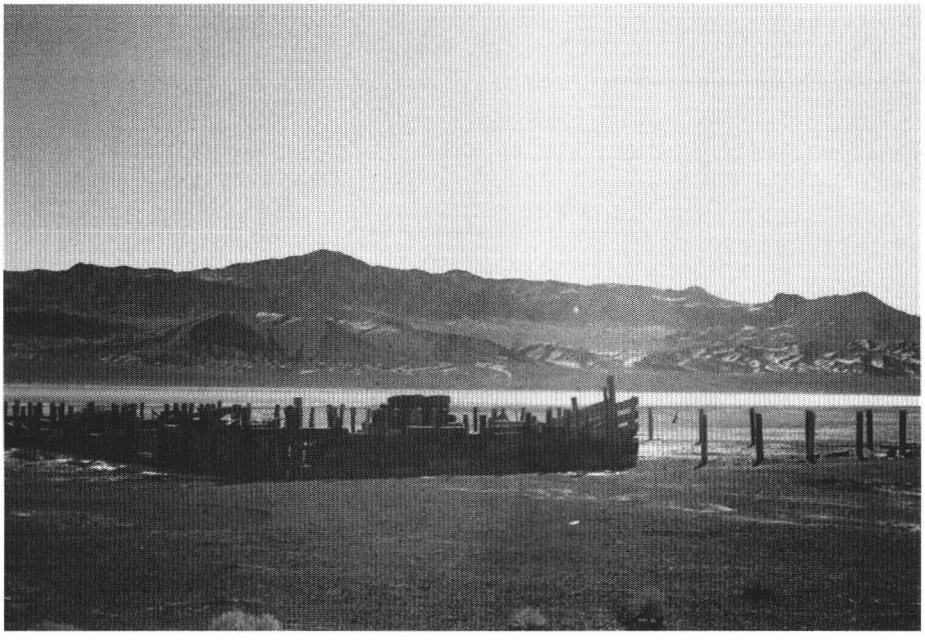
The mules were tough animals, surer-footed in mountains than horses, more tolerant of thirst, thriftier on marginal desert feed, less apt to spook. But in the central Nevada desert these mules, naturally hardy or not, were so used up they were unable to carry a load. Their riders, pounded and stiff from too much time in the saddle, dismounted to walk on rocks and hot sand, catching ankles on saltbrush and shadscale. As the Ebbetts expedition slowly moved east in 1853 toward the distant Virgin River of Utah, they moved into country ever less like anything left behind in California.

Desert scrub supplanted scattered pinyon-juniper trees, drought displaced open water. The worst camps, and there were several, were bone dry. Thirst enhanced ingenuity, and the men quickly adopted the tricks of desert survival. By camping on dry canyon streambeds they could find water. As the night air lost its warmth, water slowed its evaporation and rose to flow atop the coarse sand. It did not last long; soon after dawn, a stream was again in retreat, disappearing steadily farther up canyon as the day warmed and the water infiltrated, leaving only dark traces of damp sand where the moisture had been wicked away. The animals were brought to drink in the dead of night, one at a time, from excavated seepholes.

Dinner that night, twenty miles into Eureka Valley, was hard bread and raw bacon, with nothing but dust to wash the food down. Ebbetts commented that "it is about as hard a time as can be met with on both men and animals—not a spear of grass or the track of an animal to be seen." The prospects at dawn, the air warming fast with a crackling-dry heat, were no better, and Ebbetts made his decision: If the Pacific Railroad Survey was to continue, it had to go elsewhere. Mules and men turned east into the aptly-named Last Chance Range.

There, the party's luck improved. They found the only usable trail through the Last Change Range for travellers with animals, and their route deposited them at Last Chance Spring in the northern end of Death Valley. While perishing had been the cost for some of the early visitors to Death Valley who went there without knowing the location of springs, luck brought the Ebbetts group to Death Valley's best possible water source.

For two days the men traveled east from the springs, through Oriental Wash to the head of Grapevine Canyon above present-day Scotty's Castle, and into Sarcobatus Flat, near Death Valley Junction. Looking across a greasewood plain, Goddard, Ebbetts, and Moore saw country ahead like the country already behind, with distant mountains beyond. Supplies were running short, the mules



Fish Lake Valley - 1966

Walker Lake

were next to useless, and the weather was turning worse. Satisfied that a railroad could be built east, they reversed course, took a more comfortable route through Willow Springs to Fish Lake Valley, and from there repaired to San Francisco.

It was John Ebbetts's conclusion that this was a harsh land, but one safe for travelers exercising caution and intelligence. When water was most needed, a detour into the mountains could reach tappable springs and creeks. Even on the flats, water occasionally burbled out of artesian springs. If spring water was sulphurous, digging unearthed potable water near the surface. Grass, sparse in some areas, was ample—even luxuriant—in others. Ebbetts's diary passages break into quiet exuberance describing Fish Lake Valley. The lake was covered with game birds, its shores grazeable, the water drinkable. "We once more have a merry camp—the fiddle is going, dancing, etc." Later settlers shared his enthusiasm, harvesting the tall meadow and salt grasses as native hay for livestock, staking desert homesteads, and with time running pipelines and aqueducts from the mountains into the heart of the valley to irrigate crops.

Ebbetts and his expeditionaries were not alone in finding Fish Lake Valley attractive. This was Indian country through and through. The ground was "covered with Indian tracks . . . the signs . . . are fresh, [the Indians] having left on our approach; on the bank of the [Cottonwood] River is one of their permanent huts, used as a sweat house." The party left the Indians largely alone, even after mules were led off, presumably to be eaten. A contrast in styles between early and later explorers was again dramatic. Where Jedediah Strong Smith described the Paiute Indians he saw in 1827 as "the most miserable objects in creation," John Ebbetts regarded them as natural features of the land.[15]

Central Nevada Railways: Denouement

The 1853 Ebbetts railroad survey was casual in its record keeping. No measurements survive, probably because few were taken.[16] Since Moore and Goddard had never surveyed a railroad before and haste was important, they simply observed and concluded, with Ebbetts, that twin rails could be brought through central Nevada. Examining the country, they spoke with authority about its difficulties and promise. The desert, especially, could be easily crossed. These were not surveys of every inch of the desert; they were far from the multiple-volume study that Grenville Dodge of the Union Pacific Railroad produced fifteen years later. Instead, they were, in the words of James Vance, Jr., fundamentally railroads, whose purpose was to establish a first presence in a wilderness.[17]

Although no one in the 1850s could be entirely sanguine about the prospects of bringing a railroad grade over the Sierra Nevada, California engineers were prepared to meet the challenge as early as 1850. The perennial optimist and booster of western interests, Senator Thomas Hart Benton of Missouri, wrote

to his constituents in 1853, touting the feasibility of a transcontinental railroad. As evidence, Benton's letter quoted an excerpt from testimony given in 1850 by John C. Frémont, the senator's son-in-law, to the effect that:

> Many lines of exploration through the wilderness country from our inhabited frontier, to the Pacific ocean, have conclusively satisfied me that the region or belt of country, lying between the 38th and 39th parallels of latitude, offer singular facilities and extraordinary comparative advantages for the construction of the proposed road.

Like Ebbetts, Frémont had first-hand knowledge of the area he was describing. A southern railroad line, through Walker Pass, was possible, Frémont noted, but he continued:[18]

> The third line, which is the middle and direct line, and that to which I give decided preference, is less known to me than either of the other three; but I believe fully in its practicability, and only see as the principal obstacle, the Great Sierra itself, which it would strike near its centre. That obstacle is not considered insurmountable . . . . It will also be remembered, that the Great Basin east of the Sierra Nevada has a general elevation of over four thousand feet, so that the mountain would be approached on the east at that elevation; and on the west the slope is wide, though descending to near the level of tide water.

The route Frémont described between the thirty-ninth and thirty-eighth parallels crossed country he had visited twice in his expeditions to the Great Basin. Those parallels in western Nevada define a strip with Columbus Salt Marsh at the south and Walker Lake in the north—not easily traveled, but passable. Both Frémont and Ebbetts had gone along an effective transcontinental traverse that would go unused.

Ebbetts and his expeditionaries had traveled almost precisely the route that the Carson and Colorado Railway line, once planned to go from Mound House, east of modern-day Carson City, to Los Angeles, would take through Esmeralda County in the 1880s. The Carson and Colorado was not a transcontinental route, but unmistakably it was an artery connecting central Nevada to the Central Pacific Railroad and the rest of the United States. After the turn of the century, a new line—the Tonopah and Goldfield Railroad, branching from the Carson and Colorado—would follow the thirty-eighth/thirty-ninth parallel route admired by Frémont. It too could have been a crucial link on the transcontinental route, but it stopped in Goldfield. Esmeralda County, once considered a prime contender as site for rail lines crossing the nation, was instead disenfranchised. By 1910, Esmeralda County and the projected Atlantic and Pacific Railroad route lay almost equidistant between the Union Pacific railroad, at approximately the fortieth parallel, and the more southern Atchison, Topeka & Santa Fe route through the Southwest.[19]

Ebbetts's publication of his diary after returning to San Francisco failed to prompt any rush to Esmeralda County. Newspapers were full of accounts of exotic places, and Esmeralda was too distant, too alien. There was reluctance

to leave proven gold diggings for the unknown. Not until Aurora boomed in 1861 as the center of the Esmeralda Mining District did crowds arrive. John Ebbetts never had a chance to return to the desert he explored. In an 1854 explosion of the San Francisco Bay steamer *Secretary*, he was killed.[20]

NOTES

[1]The standard source on the "Great Surveys" of the American West, including that of Lieutenant George Montague Wheeler in Nevada is by Richard A. Bartlett, *Great Surveys of the American West*, The American Exploration and Travel Series, Volume 38 (Norman: University of Oklahoma Press, 1962). Cast on a different scale, but still useful, is the almost simultaneously published volume by Gloria Griffen Cline, *Exploring the Great Basin* (Norman: University of Oklahoma Press, 1963). Interesting, but spotty in its coverage and without any acknowledgement of the Ebbetts expedition, is Alvin R. McClane, "Exploration and Early Mapping in Nevada,"*Nevada Historical Society Quarterly* 31(4) (Winter 1988), 282-290.

[2]The Ebbetts quotations interspersed throughout the next dozen pages are from John Ebbetts's diary, published in *The San Francisco Daily Herald and Mirror*, 19 and 20 December 1853. The narrative is free from the exaggerations that often clutter first-accounts of exploratory expeditions. The Ebbetts route is also described in George Goddard's maps, fully cited below in note 8. Until Stewart Mitchell recalled the Ebbetts expedition in an article published in 1955, this was, as Mitchell called it, " A Forgotten Exploration." The trip is unremembered by California and Nevada historians. Although Mitchell did not mention Goddard's remarkable maps, his trip account is otherwise thorough, published in the *California Historical Society Quarterly* 34:3 (September 1955), 209-29. Richard N. Lingenfelter's *Death Valley and the Amargosa: A Land of Illusion* (Berkeley: University of California Press, 1986) draws on Mitchell's article, but goes no further in putting the expedition in context. Notes detailing Goddard's mapping and his sizable production of artwork also appear in George H. Goddard, "General Description of the Goddard Collection of Pictures, Maps, &c," presented by A.E. Goddard to the California State Library, Sacramento, on 29 January 1903.

[3]The early maps of the American West are best treated in Carl I. Wheat's *Mapping the Transmississippi West* (San Francisco: Institute of Historical Cartography, 1957-1963) in five volumes of what Wheat calls cartobibliography. Wheat missed very little, although manuscript maps are sometimes not included. The Frémont-Preuss efforts are reproduced in Donald Jackson and Mary Lee Spence, editors, *The Expeditions of John Charles Frémont*, Vol. 4, Map Portfolio (Urbana-Champaign: University of Illinois Press, 1970). Jackson's commentary on the maps is quite good. Cartographic knowledge of the West proceeded in jumps and starts; much of the early mapping came as cartographers attempted to draw the West from traveler's accounts. These are generally unsatisfactory. Especially useful on the Frémont expeditions is the more accurate Charles Preuss, *Exploring with Frémont: The Private Diaries* edited by Erwin G. Gudde and Elisabeth K. Gudde (Norman: University of Oklahoma Press; 1958); my own take on Preuss, in brief, appears in Paul F. Starrs, "Charles Preuss," *Touchstone*, (Reno: Nevada Humanities Committee, 21:3 [July 1997]), 1, 10-11. By the late 1840s, after Frémont, knowledge was picking up; by the 1890s, a sizable part of the West was mapped, though not with striking accuracy, as part of the General Land Office's attempts to delimit land for homesteading. Nevada fared especially well, since George M. Wheeler produced topographic maps of much of the state as part of his "Great Surveys" expedition.

[4]Although there is endless information about railroads, there is very little that is concise and easily come by. On development of the most important rural railroad in Esmeralda, see John F. Due, " The Carson and Colorado Railroad," *Economic Geography* 27:3 (July 1951), 251-268. The best sources tend to be written by highly devoted monograph writers. David Myrick's *The Railroads of Nevada and Eastern California* (Berkeley, California: Howell-North Books, 1962) in two encyclopedic volumes is very good, even on local history, as it describes why the railroads came where they did, but it is without any explanation of how the rail systems tied together as any part of national expansion. A good but dated study is Robert Edgar Riegel's *The Story of the Western Railroads* (Lincoln: University of Nebraska Press, 1964) and, for western events including

the building of the transcontinental railroad, there is Francis Farquhar's *The History of the Sierra Nevada* (Berkeley: University of California Press, 1965).

[5]There is considerable disparity, even in the year 1853, about the best route; the arguments involved jockeying for finance, by and large. John C. Frémont was pushing for a direct route across the central Sierra. Frémont's optimism about a north-central Sierra railroad crossing is in striking contrast to the account in Pat Adler and Walt Wheelock, *Walker's Railroad Routes—1853* (Glendale, Calif.: La Siesta Press; 1965), 9-11; see also note 18.

[6] Curiously, there is no mention of the Ebbetts expedition in Adler and Wheelock's *Walker's Railroad Routes*; to date, the only scholarly notice of any actual work being done for the Atlantic and Pacific Railroad Company is in Lingenfelter's *Death Valley*, which follows Stewart Mitchell's "A Forgotten Exploration." Although the full description of railroad surveys in the *Report of the Secretary of War on the Several Pacific Railroad Explorations* (33rd Congress, 1st Session, H.R. Doc. 129, 1855) is, of course, authoritative, also helpful are James Harlan Simpson's two accounts, including *Report of Explorations across the Great Basin of the Territory oJ Utah, for a Direct Wagon Route from Camp Floyd to Genoa in 1859* (Washington, D.C.: Government Printing Office, 1878). The better known *Report of Lt. Col. J.H. Simpson on the Union Pacific Railroad and Branches, Central Pacific Railroad of California, Western Pacific Railroad, Wagons Roads in the Territory of Idaho, Montana, Dakota, and Neloraska and the Washington Aqueduct* (Washington, D.C.: Government Printing Office, 1866) actually misses Esmeralda County and the thirty-eighth parallel. An outstanding source remains William Goetzmann, *Army Exploration in the American West: 1803-1863* (Lincoln: University of Nebraska Press; 1979); passable is George Leslie Albright's *Official Explorations for the Pacif c Railroad: 1853-1855* (Berkeley: University of California Press, 1921).

[7]On the logistics of organizing and financing the trip, see Hubert Howe Bancroft, *Chronicles of the Builders* (San Francisco: Bancroft Publishing; 18911892), Volume 6, 2.

[8]Tredwell Moore's early history is obscure, but he is mentioned in Farqhar, *History of the Sierra Nevada*,95-96, n. 3, and 104, n. 18. On Moore and the Mono Basin, see Thomas Christopher Fletcher, *Paiute, Prospector, Pioneer: The Bodie-Mono Lake Area in the Nineteenth Century* (Lee Vining, Calif.: Artemisia Press; 1987).

[9]Published in San Francisco by George Goddard as Britton and Rey's *Map of the State of California*, this map is one of the gems of western cartography. Most of the Great Basin is shown as tentative mountains, but along the western edge there is Esmeralda County (not labeled as such because Nevada in 1857 was still part of the Utah Territory), and there, everything is precisely as it should be, because that was country Goddard had traversed with Ebbetts in 1853 and mapped it quite accurately on his 1853 *Nevada: Walker's Lake and Soda Spring Valley (*California State Geological Survey Map Collection no. 124, George H. Goddard, manuscript map in U.C. Berkeley's Bancroft Library, G9990 C3, no. 124 [size C]). Between the two maps there are some differences in names: Although called Fish Lake Valley on the 1853 map, the valley has its name changed to Indian Valley on the effort of 1857 (compare Map 2 with Map 5). Why Goddard changed the name remains a mystery; certainly the name Fish Lake was in use from the earliest days of the Esmeralda Mining District in the 1860s. Helen Carlson's *Nevada Place Names* (Reno: University of Nevada Press, 1974) is largely unhelpful; it mentions an anonymous 1881 map of Nevada and the Wheeler Expedition's report, both of which use the name Fish Lake. The 1857 Goddard map was republished by The Bancroft Library to accompany Albert Shumate's *The Life of George Henry Goddard*, Keepsake no. 17 of the Friends of The Bancroft Library (Berkeley, California: The Bancroft Library, 1969). In 1853, however, Goddard's accomplishments (some attribute 600 original maps to him) lay ahead.

[10]Tredwell Moore, though clearly an extremely capable man, has not been able, thus far, to avoid obscurity. Although Ebbetts Pass was named after John Ebbetts, California historians are agreed that Moore was along on the 1851 expedition in which Ebbetts crossed the pass. Moore's reports, both from 1852 (Fletcher, *Paiute, Prospector, Pioneer*, n. 7) and 1853 (letter of March 16, 1983 to Starrs from Charles Shaughnessy, Navy and Old Army Branch, Military Archives Branch, National Archives, Washington, D.C.) were lost. I had thought that the government never destroyed anything, but here fire appears to have taken its toll, burning many of the records (sadly, and unfortunately especially of the Engineer or Topographic Division) warehoused in Kansas City, Missouri. There is a book just waiting to be written about Moore's life by some especially dogged researcher; his career is one of the West's best kept secrets.

[11]James E. Vance, Jr. *The North American Railroad* (Baltimore: The Johns Hopkins University Press; 1996), 148-96.

[12]James A. McDougal, letter, *San Francisco Alta* (25 August 1853), p. 8. McDougal went on to represent California in Washington, D.C. in 1854.

[13]The literature on Ebbetts is extremely difficult to follow. Basic details about his life are unknown—including how, exactly, he arrived in California. In "Ebbetts Pass," a manuscript essay held in the California State Library (printed by R. Coke Wood [Murphys, California? 1957?], California State Library, cF868 A35 W6) a note appears that "John A.N. Ebbetts had come to California in 1849 at the age of 33 as the leader of the Knickerbocker Exploration Company of New York. It was stated by the Fort Smith *Herald* when the party stopped at that 'jumping off point that the leader was a seasoned campaigner who had seen service in the employ of the American Fur Company" (8). Ebbetts's connection to the Knickerbocker Company, as it was also known, is raised in the "Notes of Phineas U. Blunt," a manuscript in The Bancroft Library (mss. no. 77/125), which traces Blunt's travels from New York to California in 1849. "Captain" Ebbetts is featured at a number of points in the manuscript account. There is no discussion of the Knickerbocker Company in the standard overland journey histories, although James Holliday does discuss joint stock travel companies, of which this may have been an example, in *The World Rushed In: The Calfornia Gold Rush Experience* (New York: Simon and Schuster, 1981), at 459-461.

[14]The origin of Eureka Valley's name is ignored by Erwin Gudde and James D. Hart, the authorities on California place names. It is a pity that the etymology is not known—whoever named Eureka Valley must have arrived from Death Valley, directly to the east, since no one coming from the west could possibly have found Eureka Valley an improvement. The name Termination Valley was coined by George M. Wheeler's party, and is officially recognized in Wheeler's *Preliminary Report Concerning Explorations and Surveys Principally in Nevada and Arizona,* United States Engineering Department (Washington, D.C.: Government Printing Office, 1872).

[15]Smith's comment is contained in a letter quoted by Dale Morgan and Carl I. Wheat, *Jedediah Strong Smith and His Maps of the American West* (San Francisco: California Historical Society, 1954), 10. Smith's perspective was not by any means cheery, yet it is still hard to imagine what foul taste he held in his mouth: He consistently complained where others, Frémont and Walker among them, rejoiced. Although for years the standard sources on Smith's trip have been a few letters he wrote after the fact, his diary was recently uncovered in St. Louis, and is available (along with a detailed analysis of his route) in *The Southwest Expedition of Jedediah S. Smith: His Personal Account of the Journey to California 1826-1827,* George R. Brooks, editor, (Glendale, Calif.: The Arthur H. Clark Company, 1977). The diary shows a man in a great hurry, but also a man judgmental and perhaps by temperament hasty and, strikingly, often injudicious in his choices.

[16]There is evidence of at least some record-taking. In a letter to his son, Augustus, dated 28 February 1854, Goddard discusses in passing the procedures of the expedition, and at the same time does show his feet of clay: "I have been so engaged in making out the map of the expedition and calculating the latitudes and longitudes and elevations that I have not been able to finish [a letter], and so write you another now instead. I got here last night from Benecia, where I have been staying with Lieutenant Moore in his employ so that [with] the whole of things going on, in his name, I shall lose the credit of most of what I have done, but as I wanted to keep in the salary I was on to the last, I thought it better, particularly as Emily was sadly off' (George H. Goddard, letter to Augustus Goddard, box 216, folder 11, California State Geological Survey Materials, California State Library, Sacramento. This collection also includes obituaries of Goddard [box 215, folder 2]).

[17]Discussions of the survey routes also appear in the seven-volume survey in the "Guidebook of the Western United States," published by the Government Printing Office. Part B, a separate volume, is *The Overland Route with a Side Trip to Yellowstone Park,* by Willis T. Lee, Ralph W. Stone, Hoyte S. Gale, and others (Washington, D.C.: Government Printing Office, 1916). In general, the theme of the series is geology, but much of that is economic geology, and there is considerable demographic, topographic, and other information contained.

[18]The actual choosing of the transcontinental railroad route had, of course, more to do with the rising sectional conflict than with which route was best—Jefferson Davis, the secretary of war soon to go on to lead the Confederacy, proposed that the southern railroad route be chosen, although it promised some very substantial difficulties and, no less important, also missed

virtually all of the settlements in the Great Plains. Thomas Hart Benton, ever the partisan of the West, argued his alternative in his "Letter from Col. Benton to the People of Missouri," of 1853 (Western Americana: Frontier History of the Trans-Mississippi West, 1550-1900, Microfilm, New Haven, Conn.: Research Publications, 1975, 1 reel), a pamphlet subtitled "Central National Highway from the Mississippi River to the Pacific," which however eloquent failed to carry its case. Frémont's letter to the Railroad Convention of April 1850, is included in Benton's argument (p. 5). Frémont also mentioned Walker Pass, but argued that it was not as good a route as "the third line [the thirty-eighth/thirty-ninth parallel route] and that to which I give a decided preference." Curiously, the nuances of Fremont's language seem to have escaped Adler and Wheelock, whose *Walker's Railroad Routes* takes Frémont's words to suggest that he preferred Walker Pass, when he actually spoke more highly of the route through Central Nevada. Joseph Reddeford Walker's testimony is reproduced at the end of their book, but it is also available in California Legislature, Session of 1853, Senate Committee on Public Lands. "Report of Committee and Statement of Captain Joseph Walker before Them of the Practicability of a Railroad from San Francisco to the United States." Walker, of course, recommended a railroad route through the southern San Joaquin that is now known as Walker Pass. He was not inclined to support any crossing to the north, and and the California Senate report includes his testimony that "From Walker's Pass, the Sierra Nevadas mountains to the Oregon line presents [*sic*] one unbroken chain, with some slight depressions, and some elevated points at the summits; rendering an insuperable barrier to a Railroad passing over or through them"(p. 6).

[19]The best summary of Nevada railroad routes is Myrick's *Railroads of Nevada and Eastern California*. He includes separate chapters for the Carson and Colorado, the Tonopah and Goldfield, the Tonopah and Tidewater, the Bullfro~Goldfield, and the Las Vegas and Goldfield lines.

[20]An obituary of Ebbetts appears in the *San Francisco Alta* (16 April 1854).

MINING AND RAILROADS IN WEST CENTRAL NEVADA

John F. Due

As metal mining developed in western Nevada and the adjacent portions of California after 1865, most of the mining areas were far removed from the state's only railroad—the Central Pacific Railway's trancontinental line along the Humboldt River. Nevada's first great mining boom, in Virginia City, was an exception, being relatively close to Reno on the rail line, but the other mining developments were too far for reasonably speedy construction of rail lines, and thus mining as well as agricultural developments and the few towns remained dependent upon freighter and stage coach lines for some years.

Development of the Railroads

This section of the paper outlines the development of the main railroads that were built in the area south of Reno, plus the lines serving Austin and Eureka. Financial statistics are provided in the appendix.

The Virginia and Truckee Railroad

Nevada's major population and economic center by 1870 was Virginia City, scene of one of the West's major silver strikes—the Comstock Lode. Though close to Reno and the Central Pacific Railway on the map, Virginia City was situated several thousand feet above Reno and Carson City, and the hauling of ore to the mills on the Carson River, the milled ore to Reno, and all the lumber and supplies to the mines was a very expensive proposition, preventing utilization of the lower grade ores.

The plan for a railroad was developed by officials of the Bank of California, the West's most important financial institution, headed by Darius Ogden Mills, William Ralston, and William Sharon, who was heavily involved in the major mines. The road from Carson to Virginia City, hauling the ore to the mills, was completed in late 1869, and that from Carson to Reno in 1870.[1] Traffic consisted

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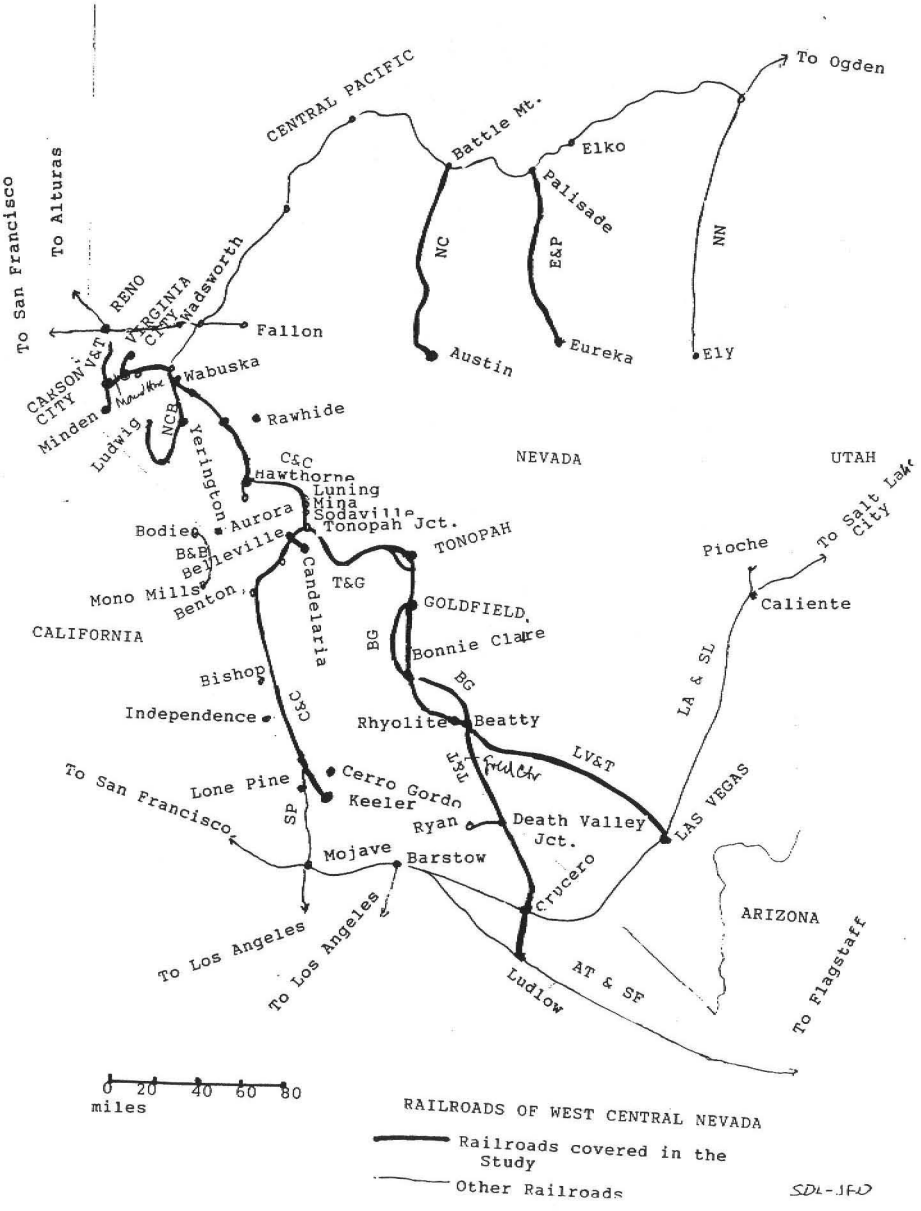


Railroads of West Central Nevada

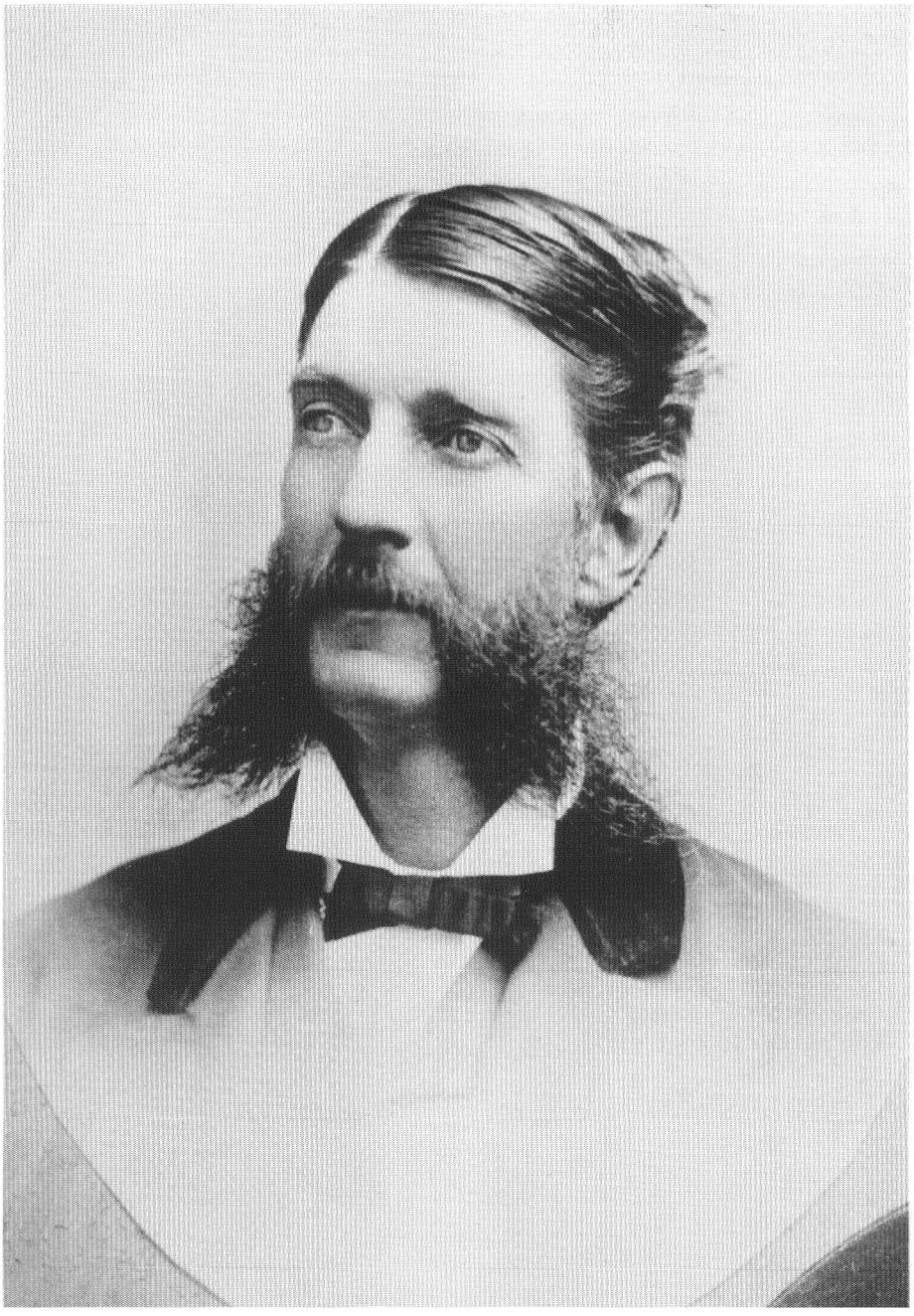
William C. Ralston - one of three who headed the Bank of California, the West's most important financial institution. *(Nevada Historical Society)*

primarily of ore, coal, and lumber—with a volume of a traffic density on the Carson-Virginia portion of nearly 200,000 ton miles per mile of line. The V&T also operated passenger service twice daily. A branch to Minden, serving an agricultural area, was built in 1910.

The Carson and Colorado Railroad

One of the most remarkable stories in the development of the western rail network was the building of the Carson and Colorado Railroad. Extending three hundred miles across Nevada deserts and through rocky unproductive hills, this railroad is an excellent example of the influence mining exerted upon transport , of the effects that decisions made by a few persons had on transport routes, and of the illogical altering of the pattern of geographic economic relationships.

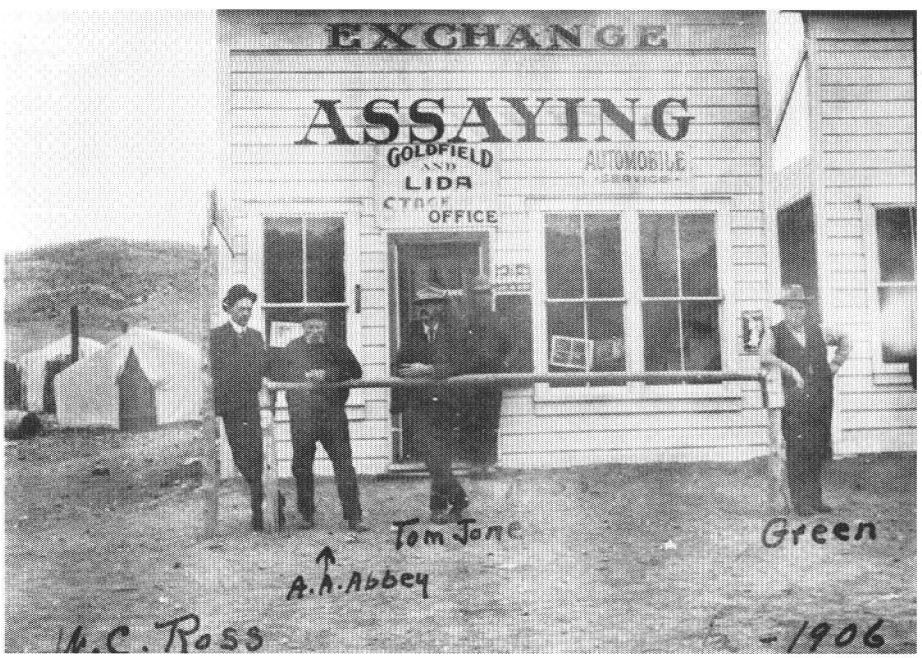
The story of the C&C has elsewhere been described extensively if not always scientifically, and need not be repeated in detail.[2] After the V&T was completed, Virginia City mining went into a decline, especially in those mines con-



H. M. Yerington, general manager of the V&T., was the principal promoter for a new line.

trolled by the Bank of California group, and this group turned to other possibilities. The principal promoter for a new line was H. M. Yerington, general manager of the V&T. The Bank of California group had substantial capital, largely from the Virginia City mines.

Accordingly, in 1881, and without much careful analysis, the V&T made the decision to build the C&C southward from Carson City, headed toward areas which had experienced, at times, considerable mining development—Aurora in the 1860s, Bodie (over the boundary in California), Candelaria, and Columbia in the 1870s and other minor areas such as Lida. So the C&C was built southward from a connection with the V&T at Mound House east of Carson; it proceeded at a surprisingly rapid pace, made possible by bank group funds. The choice of narrow gauge (3 foot) was made to lower costs, but required transfer of all freight at Mound House. The route roughly followed that of the freight wagons rather than the stage coaches on a relatively level path along the east side of Walker Lake to a point named Hawthorne, where the railroad created a town; it then went on to Sodaville south of the present Mina. Here the track was built westward, now up a considerable grade, to Belleville, location of the mills for the Candelaria ore, and on up a steeper grade with two long wooden trestles to Candelaria, the temporary metropolis of the area.[3] The track reached Hawthorne (where stage and wagon connections were made for Bodie) and Belleville in 1881, and Candelaria early in 1882.



Lida Assaying Office and Stage Depot in Esmeralda County *(Nevada Historical Society)*

The decision was then made to build into the Owens Valley, a move that had considerable impact on the area, instead of following the original route to Lida, Gold Mountain, and the Colorado River. Far to the south, in the same period of the 1870s, the Cerro Gordo mine, near Owens Lake in the Owens Valley, became a major silver-zinc producer. For the Cerro Gordo, Panamint, and Darwin traffic, plans for a railroad to the Los Angeles area (specifically Santa Monica) were developed, primarily by J. P. Jones of Virginia City, but only the portion from Santa Monica to Los Angeles was built. There were other rail plans as well, but no road materialized until the C&C was built from the north.

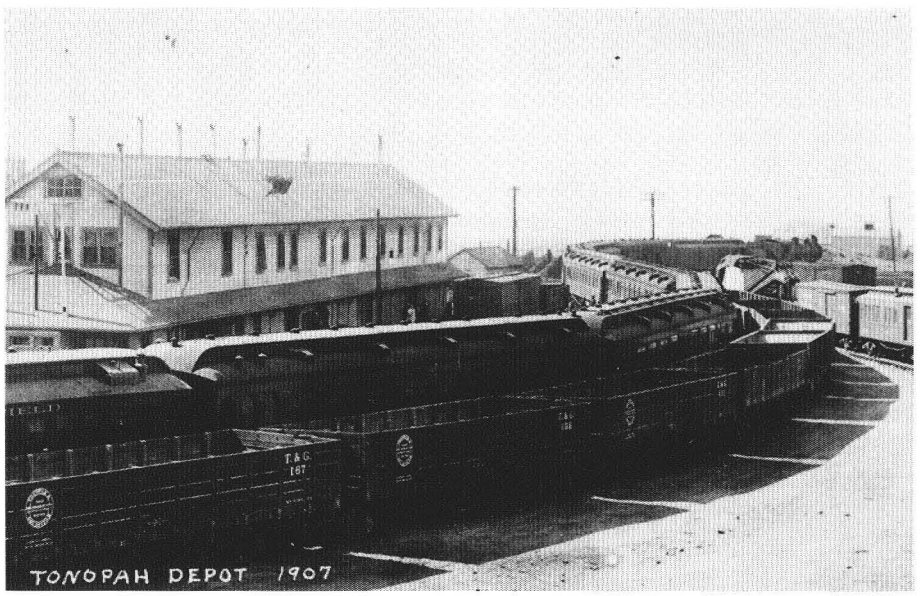
The extension required a 3 percent grade southbound and a 3.2 percent grade northbound over Montgomery Pass, and then a long straight track down the east side of the Owens Valley to Keeler, near Owens Lake. The road made surveys to extend the line to a connection with the Southern Pacific at Mojave, but this was not done.

For many years train service was mixed (except for some cattle specials), and ran the first day from Mound House to Candelaria, and the second on to Keeler. Operation was typically three times a week.

Shops in Hawthorne, 1893 *(Nevada Historical Society)*

Tonopah and Goldfield Railroad[4]

Shortly after the turn of the century, following two decades of mining decline, Nevada experienced its second great mining boom. Almost by accident silver was discovered in the barren mountains about a hundred miles east of Candelaria. Three years later an equally important discovery of ore, primarily gold, was made forty miles to the south of the silver strike.The former resulted in Tonopah, the latter in Goldfield.[5] But roughly one hundred miles of desert separated the two new developments from the C&C at Sodaville or at Candelaria, the nearest rail point. Wagon freighting boomed, but at high cost and substantial delay, and in 1903 construction of a rail line from Sodaville began. Initially the Tonopah and Goldfield Railroad was narrow gauge like the C&C, but it was converted to standard in 1906 when the C&C north of Mina was converted. The new line was completed to Tonopah in 1904 and to Goldfield in 1905, at a reported total cost of $3.2 million. The road was built by the Philadelphia interests who owned the Tonopah Mining Company (TMC), which, with its affiliated Tonopah-Belmont Development Company, controlled most of the mining in Tonopah. Funds were primarily by TMC. Directors included the top TMC personnel plus United States Senator Tasker L. Oddie and George Nixon, a major financial promoter in Nevada, subsequently also a United States senator.



Depot at Tonopah, 1907 *(Nevada Historical Society)*

The T&G was not a small scale operation. For example, in 1907 the road had 12 locomotives, 13 passenger cars, and 269 freight cars. Passenger service was operated from the beginning and was an important revenue source, about one third of the total in early years. A through Pullman car was operated from the Oakland pier in conjunction with the Southern Pacific Railroad. The train typically operated overnight southbound, and in the daytime northbound.

Only a few changes occurred in the line. The McSweeney cutoff, which allowed through freights bound for Goldfield to avoid the long climb to Tonopah, was built in 1907, but regular use was discontinued in 1911, and it was abandoned in 1927.[6] A major element in the road's traffic was hauling ore from the producing areas in Tonopah to Millers, downhill thirteen miles, where the mill had been located because of water. Oil had replaced coal as fuel, but the road never owned diesels, using borrowed ones during World War II.

The Tonopah and Tidewater Railroad[7]

The area south of Goldfield had experienced some early mining developments, particularly at Lida and Gold Point. As noted, the original plans of the Carson and Colorado called for building beyond Candelaria to Silver Peak, Lida, and Gold Mountain. But these areas had started their decline by 1880 and so the C&C was extended into the Owens Valley instead. With the discovery at Goldfield, prospecting in the southern area increased, and discoveries around Beatty and Rhyolite, called the Bullfrog District, renewed the interest of potential railroad builders from both Goldfield and the south, particularly because of the building of the San Pedro, Los Angeles, and Salt Lake line. Interest in the area increased also with the discovery of the Colemanite form of borax in the Death Valley area.

The first of the area roads to be promoted but the last to get under way and the last south of Goldfield to survive, the Tonopah and Tidewater Railroad was from the beginning developed and controlled by F.M. "Borax" Smith, Smith's Pacific Coast Borax Company, and its successors.[8] The primary aim was to improve transport of the company's borax from the Lila C and other mines on the edge of Death Valley following depletion of the borax in the lakes farthest north. Mineral traffic was envisaged, but it was not the prime attraction.

Initially, Smith cooperated with the Montana Copper King William A. Clark, who was building the LA&SL. But the Clark group became suspicious of Smith's plans and banned a connection at Las Vegas where construction had been started in 1905. Thus in 1906 Tonopah and Tidewater construction restarted, but at Ludlow, on the Atchison, Topeka, and Santa Fe, 167 miles from Beatty, compared to 118 from Las Vegas, and with more difficult terrain on the new route. The plan was to build ultimately to Tonopah. By 1907 the line had reached the borax area, and in October arrived at Gold Center in the Bullfrog District, the farthest north that it would ever build. While the route was longer from its

F.M. "Borax" Smith, owner of Smith's Pacific Coast Borax Company, developed and controlled the Tonopah and Tidewater Railroad from the beginning. *(Nevada Historical Society)*

connecting line than the Las Vegas road, it was a shorter path to Los Angeles, and soon dominated the passenger traffic.

In 1908 the T&T combined operations with the Bullfrog-Goldfield Railway, thus finally gaining direct access to Goldfield. But T&T traffic was primarily borax (supplied to it later by the connecting and jointly owned Death Valley Railroad) and ore, plus the usual inbound traffic. The road had plans to build to Los Angeles and to Ely and Salt Lake City, but fortunately these were never implemented.

The road developed limited passenger service, operating through Pullmans with the Santa Fe to Goldfield. The train left Ludlow at 4:50 A.M., arriving in Goldfield at 6:00 P.M., after one of the least scenic and in summer hottest rides anywhere in the United States. Later, passenger service to Furnace Creek Resort in Death Valley was established. Even as late as 1930, Pullman service now only to Death Valley Junction, was still operated, in conjunction with the Union Pacific, via Crucero.

Bullfrog-Goldfield Railroad[9]

The Bullfrog-Goldfield Railroad was the least successful of all the area roads—operated primarily by the other lines in the area and never covering even its operating costs except during very short periods.

With major mineral discoveries in what was called the Bullfrog district, the Tonopah and Goldfield management as early as 1904 developed the plan for a railroad running south from Goldfield to reach the new mining areas and provide new traffic for the T&G, as well as preserving the existing Tonopah-Goldfield traffic. The plans to build south from Goldfield were made even before its own line reached Goldfield. But construction was delayed until March 1907 by legal and financing problems. The new road, under the Bullfrog-Goldfield name, reached Beatty, center of the new mining area, in April of 1907, but the Las Vegas and Tonopah Railroad had already arrived and built on to Goldfield, to provide the final link in a north-south through rail line in Nevada—Reno to Las Vegas. But the B-G built on to Goldfield, thus duplicating the LV&T. In addition to the LV&T, the T&T reached Gold Center in the Bullfrog area in the same period.

Las Vegas and Tonopah Railroad[10]

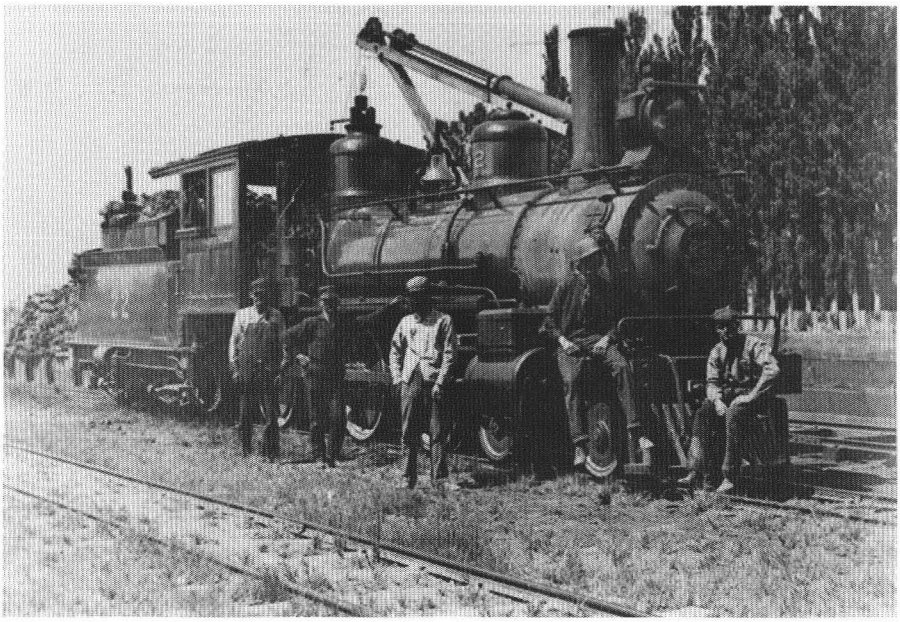
The second line to be built into the area south of Goldfield was the Las Vegas and Tonopah Railroad, whose history is as uncomplicated as that of the B-G is complex. This road was a project of Clark's Montana enterprise, principal promoter of the San Pedro, Los Angeles and Salt Lake line (LA&SL). The LV&T was completed between the terminal cities of its name in 1905. The LA&SL ultimately became a portion of the Union Pacific, a half owner from the beginning. As the LA&SL line was completed, the major mining boom occurred in

the Bullfrog area, and the Clark interests decided upon building into the area from Las Vegas, then a mere village. The Clarks, at first affiliated with F. M. Smith, pushed him out, fearing his ultimate goal was to dominate traffic in the area, and built their own line, the Las Vegas and Tonopah. It was financed entirely by the Clark fortunes, and the UP was not involved; technically it was not a subsidiary of the LA&SL. The line was completed to Beatty and to Rhyolite in 1906, and on to Goldfield in 1907.

Nevada Copper Belt Railroad[11]

While copper had been discovered in the mountains west of what became Yerington in the 1860s, not until 1906 was there serious mining development, by the Nevada Douglas Copper Company headed by A. J. Orem. The Orem interests formed the Nevada Copper Belt Railroad in 1909, to build from Wabuska on the Southern Pacific through Yerington to Ludwig, forty-one miles. The track reached Yerington in 1910, and Ludwig in 1911. A short extension was built eastward from Wabuska to reach the smelter at Thompson. The passenger service was provided most of the time by a Hall Scott motor car, which also hauled several freight cars when needed.

A. J. Orem and his Nevada Douglas Copper Company formed the Nevada Copper Belt Railroad in 1909. *(Nevada Historical Society)*



Bank of California (D.O. Mills) interests incorporated the Eureka and Palisade in 1873, and in 1875 completed its line from Palisade to Eureka. *(Nevada Historical Society)*

Eureka and Palisade (Eureka Nevada)[12]

One of the earliest towns in Nevada was Eureka on the old Pony Express route (later the route of U.S. 50). Rich lead-silver ore was discovered in the late 1860s. The ore was hauled ninety miles by freighter at $20 a ton to the Central Pacific at Palisade. There was interest in a railroad as early as 1871. Local mine owners incorporated the enterprise, and then sold out to the Bank of California (D.O. Mills) interests, which built the railroad. The Eureka and Palisade was incorporated in 1873, and in 1875 completed its line from Palisade to Eureka at a reported cost of $1.5 million. This was a narrow gauge (3 foot) line. Traffic in lead and silver bullion was substantial, as was incoming freight. Some local traffic in charcoal and hay was carried from points on the line to Eureka. The road was projected to Pioche in southeastern Nevada, but never built. Substantial emphasis was placed on high-quality service, including the passenger train, which made the ninety miles in four hours—a good figure, given the gauge and nature of the track.

Nevada Central Railroad[13]

In some respects the history of the Nevada Central Railroad was similar to that of Eureka and Palisade (Eureka Nevada). They were parallel lines, about fifty miles apart, extending south from the Central Pacific—the NC to Austin

and the E&P to Eureka. An attempt to build the Nevada Central by one of the mining companies in 1878 had failed for lack of financing, but in 1879-80 the Phelps-Stokes interests involved in Arizona mining took over the project and financed the line.

The 3-foot-gauge road was built rapidly (and cheaply) to meet the deadline for a local subsidy. Fares (10 cents a mile) and rates (20 cents per ton mile) were attacked by users as unreasonably high. Completion of the Carson and Colorado caused the line to lose most of its central Nevada connecting wagon traffic. Surprisingly, the Union Pacific bought the line in 1881 as a possible link in a new route to San Francisco, but the company was allowed to go into bankruptcy in 1894 when the UP dropped its plans for the new route. The road was re-acquired by the Phelps-Stokes interests. One of the officials, sent out by Phelps-Stokes from New York, was Tasker L. Oddie, later a Nevada United States Senator.[14]

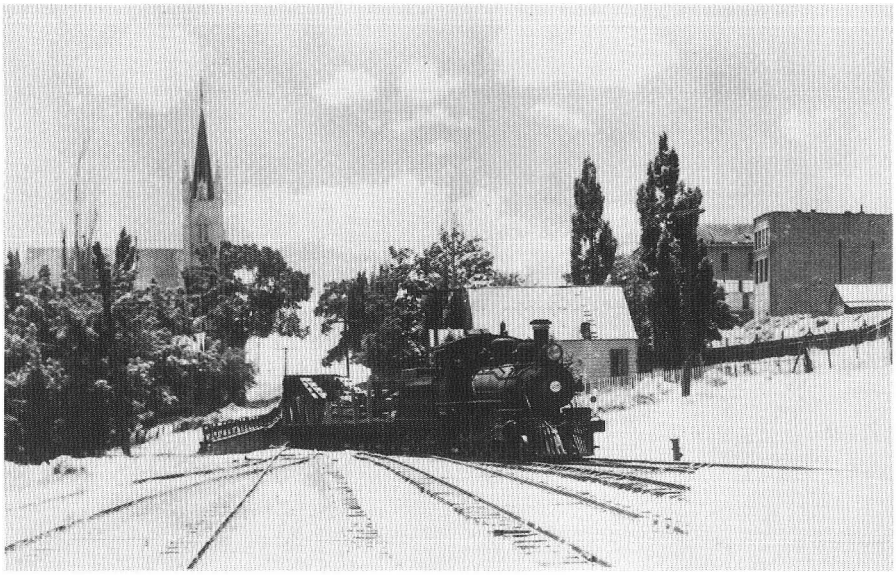
Prosperity and Decline

Although several railroads did very well financially in the first few years, most enjoyed reasonable prosperity for only a brief period and some continued for long periods despite operating deficits.

Virginia and Truckee Railroad

One of the three most successful lines was the Virginia and Truckee, with no competition and a very high volume of traffic in its early years. The road and equipment had cost no more than $4,000,000 and probably much less, and with initial net profits as high as $1 million, the road recovered its original investment from profit in the first decade of its operation.

Until 1893, gross revenue and net earnings held up relatively well, although the gross fell to one third of the peak, with ton miles well in excess of that needed for profitable operation. There was a sharp drop in net operating income after 1894, but some recovery after 1903, with the figure remaining positive until 1924. Dividends were paid until that year. From 1924 on, however, the road showed an after-tax deficit from railway operations except in 1946. The Virginia City portion was abandoned in 1938 as the traffic was negligible and a tunnel was collapsing. The railroad continued to operate mixed train service daily except Sunday from Reno to Carson and Minden in order to retain the important mail contract. By the late 1940s, outbound traffic consisted primarily of cattle, hay, potatoes, mineral products, and zinc ore; inbound traffic was primarily petroleum products and cattle. About thirty-nine cars were originated or terminated per mile. Steam locomotives were used til the end; diesels would have reduced operating costs, but the revenue did not warrant them. By 1948, as traffic fell, the situation for the entire line appeared hopeless, and the track and equipment were in bad shape.



The Virginia & Truckee Railroad train in Virginia City, Nevada. *(Nevada Historical Society)*

The V&T was able to continue as long as it did only because its owner, Ogden Mills, (son of D.O. Mills and a United States secretary of the treasury in the Hoover Administration), had a strong attachment to the line, and was willing to cover the deficit. Following his death in 1937, the trustees continued to cover the deficits, but finally sought to abandon, which they did in 1950. Had the line survived a few years longer, it might have operated successfully as a tourist carrier.

Carson and Colorado Railroad

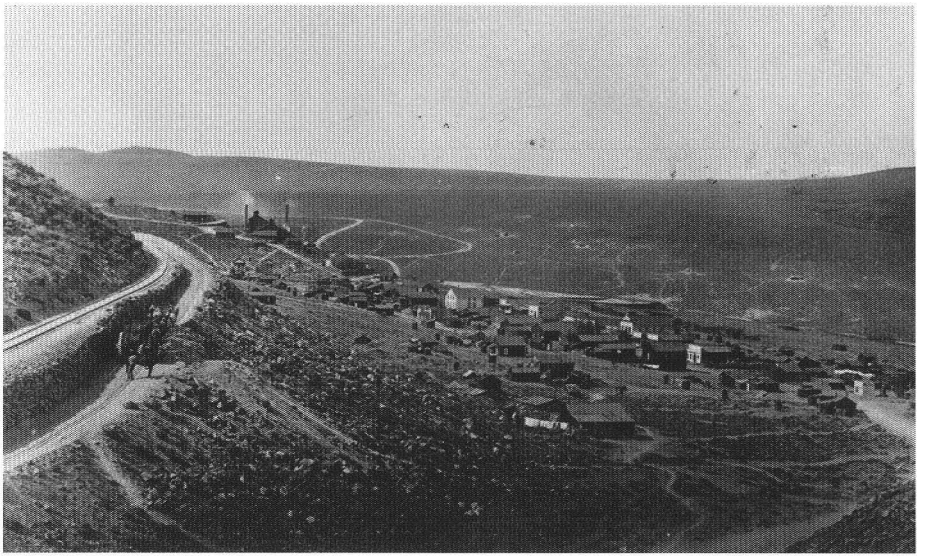
The Carson and Colorado was initially profitable, earning an average return on investment during 1881-83. But the road was barely completed before economic disaster struck. Mining decreased at all the points served. Candelaria, which dated back to the mid 1860s, boomed around 1880, reached its peak of prosperity in 1883 and almost immediately went downhill. The decline resulted partly from lawsuits against the major mining enterprise, Northern Belle, which caused temporary and then final closure in 1891. The Diablo continued on a smaller scale, building a new mill at Sodaville. The Candelaria Water and Mining Company built a mill in Candelaria in 1885-86, but the mines closed shortly thereafter. Most mining in the area ceased in 1891 and did not revive during the depressed 1890s. By 1894, rail revenue had fallen 70 percent from the peak years. Ultimately there was some revival, but on a small scale, and all activity ended in the mid 1920s as the price of silver fell again. Even before Candelaria

began to fail, Bodie's production had fallen, and plans to build a branch to it were abandoned. To cap the decline, Cerro Gordo had reached its peak production and traffic dwindled.

The estimates or faith underpinning the decision to build the C&C proved erroneous—partly because of a decline in high grade ore and the absence of new major strikes, and partly because the price of silver fell drastically, after the repeal of the Sherman Silver Purchase Act in 1893 and the expiration of the Pittman Silver Purchase Act in the 1920s.

The owners never considered, so far as is known, abandoning the line. Reportedly Mills had lost all interest, but Yerington had not, and the latter carried the line on—the still profitable V&T bore much of the administrative overhead, and expenses were held down. The road managed to avoid operating deficits, but earned negligible returns on investment over the fifteen year period. Passenger service continued, though with traffic weakening as populations faded; Candelaria, with a 1880 census figure of 766 and a peak of about 1,500 in 1882-83, fell to 345 inhabitants in 1890, and 32 in 1910. Other towns lost comparable numbers.

In 1900 the owners of the C&C accepted a $2,750,000 purchase offer from the Southern Pacific; the SP was interested in making the road part of a through line from the Reno area to Los Angeles. But the sale turned out to be a great mistake for the seller. The dwindling traffic on the line experienced a dramatic reversal shortly after 1900 with the new strikes at Tonopah and Goldfield. These



Candelaria,1885. With a 1880 census figure of 766 and a peak of about 1,500 in 1882-83, Candelaria fell to 345 inhabitants in 1890, and 32 in 1910.*(Nevada Historical Society)*

were the greatest discoveries since Virginia City, and Goldfield in a few years became the largest city in Nevada. The result was a tremendous increase in traffic on the C&C, with transfer to freighters at Sodaville and Candelaria. As noted, the Tonopah and Goldfield was built from Mina to Tonopah and later extended to Goldfield. Ultimately the portion of the former C&C north of Mina was converted to standard gauge. Likewise, in 1910 the SP built a standard-gauge line from Owenyo (near Keeler) to Mojave, but the Mina-Keeler portion never became standard gauge. The portion of the C&C over Mongomery Pass was abandoned in 1938. The long unused line to Candelaria had been abandoned in 1931.

Tonopah and Goldfield Railroad

The Tonopah and Goldfield, built by the Tonopah Mining Company in the midst of the great mining boom, was initially highly profitable, and earnings continued for a sunstantial period. Net earnings were 10 percent or better on investment and probably recovered the actual line and equpment cost in the first five years. From 1905 through 1915 the total railroad operating income was similar to that in Candelaria; mining output sank rapidly after 1906 and the railroad operating revenue fell 60 percent between 1907 and 1909. Despite the decline in mining, railroad gross revenue and earnings held up remarkably well from 1909 to 1917, covering a 5 percent return on the estimated original investment. Net operating income remained positive down to 1925 and during 1928-29 and 1931-36, though operating revenue fell about 45 percent from 1917 to 1925. Except for 1942 and 1944, net operating income was negative after 1936. Dividends were paid up through 1926; the last of the debt was paid off by 1918.

In 1940, the line handled 458 cars outbound (420 were of ore) and 591 inbound, with a wide range of goods, though more than half were petroleum products. The total number of cars originated-terminated per mile was only 11—well below the level at which a railroad line is typically viable. Passenger traffic fell from 25,393 in 1917 to 266 in 1938. But operation continued, partly because the ore shippers sought it, partly because President W. L. Haehnlein was strongly committed to keeping it going. But abandonment was imminent by 1941, Haenlein died early in 1942, and shortly thereafter the TMC sold the road to the Louis Dulien scrap-metal firm of Seattle for $226,768. But the outbreak of World War II and location of an airfield near Tonopah gave the road a few more years, primarily handling petroleum fuel for the air base from 1942 through 1944. But with the end of the war, service stopped in 1946 and abandonment was approved, despite strong protests of the two major ore shippers. Continued operation was hopeless.[16]

Oil had replaced coal as fuel, but the road never owned diesels, although it borrowed some during World War II. The location of the maintenance facilities

in Goldfield (to which they had been moved in 1909 following a fire in Tonopah) was a handicap in later years, as the traffic to that point was nil, and trains had to run thirty-one unproductive miles. In the later decades, a rail gas-electric motor car was used for passenger service, alternating with the mixed train.

Tonopah and Tidewater Railroad

The Tonopah and Tidewater provides another example of a railroad that continued to operate for a long period earning little or nothing on the investment. At first the road did reasonably well, although not earning a large return; in its first decade, only 1907, 1909, and 1915 showed a 5 percent return on estimated investment. Then in 1914, it lost its line to Goldfield (which it had operated in conjunction with Bullfrog-Goldfield) when the Las Vegas and Tonopah and the B-G merged (though in 1918 the T&T operation of the B-G again). Its best years were 1917 and 1923. Over the entire period 1907-31, railroad operating revenue was $2,843,668, operating expenses $1,874,547, and railway operating revenues after taxes $832,281. A 5 percent return on investment would have required railway operating income of $125,000 a year or $3 million over the period.

In 1927-28 the final blows came—all connection to Goldfield and Tonopah was lost, and borax production shifted to the Trona-Mojave area. Gross revenue was cut in half between 1926 and 1928. Conditions were now serious. Never again would the road cover operating expenses and taxes. Remaining traffic was primarily talc to Los Angeles for tile and pottery production, and silica. Inbound traffic was primarily gasoline. In 1933, total inbound and outbound traffic was 600 cars (in 1938, it rose to 722 cars) on the 168 miles remaining, with fewer than 4 cars per mile originated or terminated.

In 1933, the useless Ludlow-Crucero portion was abandoned; the Death Valley connection had been abandoned in 1931. Heavy losses were incurred annually, and while Borax Consolidated, Ltd. continued to cover the loss, its interest in the line had ended. Following floods in 1938 and continued losses, abandonment was approved by the Interstate Commerce Commission in 1940, and the line was dismantled in 1942.

Bullfrog-Goldfield Railway

The Bullfrog-Goldfield was the least successful of all the area roads, operated primarily by the other rail companies in the area and never covering even operating costs except for very short periods. In the nineteen years of its life, it covered operating expenses only in four years, 1909 and 1915-17, and never earned an average return on investment. It suffered from two problems: competition from the parallel Las Vegas and Tonopah, which had the financial backing of the Clark interests, and the rapid decline in mining, partly from exhaustion of good ore, partly from the panic of 1907.

Attempts were made to lessen the duplication problem. The T&T never built north from Gold Center, and the B-G and the LV&T agreed to consolidate their lines in 1914. The LV&T abandoned its line from the Bullfrog area to Bonnie Claire and the B-G its line from Bonnie Claire north to Goldfield, each road using the combined track, as did the T&T. Meantime in 1907 the T&G resumed operation of the B-G, but in 1908, operation was transferred to the T&T, then to the LV&T in 1914, and back to the T&T in 1918.

By 1918 most mining in the area had ceased and consolidating rail lines could not solve the problem. So in 1927 the B-G applied for permission to abandon its line; this was granted and service ended in 1928, breaking the through route.[18] Rhyolite Union Station had no use whatever but still stands in the desert.

Las Vegas and Tonopah Railroad

The LV&T, one of the longest lines in the area, earned a substantial operating profit in 1907 with an operating ratio of 44 percent; it had an operating profit in 1908 also, but never again. With the outbreak of World War I, the Federal Railway Administration removed the road from the national system, and the firm had little choice but to discontinue operations in 1918 and remove the track a year later.

Nevada Copper Belt Railroad

The Nevada Copper Belt Railroad did well in the first three years of operation, 1912, 1913, and 1914, but had widely fluctuating earnings thereafter. It had subsequent periods of sunstantial traffic and earnings covering an average return on investment during 1917-18 and 1924-29, but during 1930-46 it never earned an average return on investment, and covered operating expenses in only three years in this period,

The ore traffic vanished when copper mining discontinued, and while the road had gained agricultural outputs from the Mason and Smith valleys, these, and farm inputs, were not significant in total. The line to Ludwig was abandoned in 1933, to Thompson in 1935, and the entire road in 1947, by which time trucks had gained much of the farm traffic. The road was owned from 1932 by Parr Terminals of Richmond, California.

Eureka and Palisade (Eureka Nevada)

The Eureka and Palisade showed a high rate of profit in 1881 and a very high rate of return on investment. The 1882-89 figures are not available. But mining declined after 1885 and 1889 revenue was only 30 percent of the 1881 figure, and for the next 15 years the revenue was typically about 15 percent of the peak year figure. Except for a few good revenue years, 1907, 1909, and 1923-25, annual operating revenue never reached $100,000 a year in the thirty-one year period. From 1927 on, except for two years, the road showed an oper-

ating loss but the amounts were small. Finally, however, the road applied for abandonment, which was granted in 1933.

The ability of the road to continue to cover operating expenses for thirty-one years with traffic not much larger than 10 percent of the peak years is a remarkable demonstration of the ability of a small railroad to hold down expenses year after year and still provide both freight and passenger service.

Nevada Central Railroad

The Nevada Cental had the unenviable record of never having earned an average return on investment. Its maximum operating revenue was gained in 1881, there was operating profit in 1881 and 1882, but negligible return on investment. Operating revenue stayed around 50 percent of the peak-year figure for a time but was little more than 15 percent in many of the succeeding years. The road showed an operating deficit in twenty-two of the next fifty-two years after 1886. Although there were a few relatively good years, the return on investment was small. The road never paid a dividend and no interest after 1917. By the 1930s, gross revenue was down to $25,000 a year. But the road kept going until abandonment became inevitable in January 1938. The scrap value was only about $25,000. In the final five years, passenger traffic averaged four persons a month. In these years, freight originated-terminated was 156 cars a year, or fewer than 2 per mile, much of this was gasoline, Ninety-five percent of the rail was the original 35-pound rail, laid more than fifty years before, and all the equipment dated from 1881 or earlier.

Conclusions

All nine of these railroads, the only relatively major regional railroads in the area in the period, plus several smaller ones, such as the Silver Peak, were built primarily to various mining (including borax) developments.

Economic Effects

All of these railroads aided mining and the mining communities to some degree, by providing lower costs than that for wagon transport, which facilitated mining and processing of lower-grade ore. But the decline in mining which the entire area experienced indicates that the railroads could not protect the mining industry against other trends, especially the exhaustion of high-grade ore, and the drop in metal prices, and in some instances the discovery elsewhere of a better ore supply (especially borax).

The railroads were also important in early years in providing passenger service, which yielded a significant part of their revenues. Passenger traffic fell with the decline in mining population and, in later years, with the rise of the motor vehicle. For a few examples of the early importance of passenger ser-

vice, the Tonopah and Tidewater gained 23 percent of its revenue from passengers in 1908, and the Tonopah and Goldfield, 24 percent in 1907 (but T&G passenger revenue fell from $571,000 in 1907 to $192,000 in 1909 and $103,000 in 1912). The Las Vegas and Tonopah gained 30 percent of its revenue from passengers in 1908, and the Bullfrog-Goldfield 34 percent in 1908 (but only 18 percent in 1912). In the later years, passenger traffic became almost negligible, for example, on the Nevada Central, with an average of four persons a month in the final five years. The exception was the Virginia and Truckee, which carried 3,800 passengers as late as 1947. The passenger service (mixed or motor train) was continued because of the important mail contracts (for example, $22,000 revenue for the V&T, ll percent of the total revenue, in 1945).

Contrary to many early expectations, the railroads had relatively little effect on the development of agriculture, primarily because the potential for agriculture was nil in some areas and limited in others. The Carson and Colorado had some influence, but with a major negative effect, in transforming the Owens Valley into an economic tributary of Nevada instead of California[22] Had a line been built north from Mojave up the valley and on to Candelaria, both the Owens Valley and possibly the mining areas would have been economically tributary to Los Angeles. But because the mining orientation and the capital of the promoters came from Virginia City and San Francisco, the whole development centered on Nevada, and indirectly on San Francisco. Politically, the Owens Valley could have no influence on either Nevada or California policy; it was truly an orphan. Railroad freight rates to and from the area were sufficiently lower than wagon freighting to Mojave that the wagons could not compete, but the C&C rates were such as to hamper growth. This line of the C&C was long given as an example of a railway pricing practice called arbitraries, in which a much higher schedule of rates per mile is applied to a given line than that used on main lines. Thus the freight to points on the C&C from either the east or west were much higher than to equivalently distant points in California. This practice was not entirely irrational, and exceptions were made, but the difference was so great that the Owens Valley could not compete with California points in vegetables, grain, fruit, etc. (except to points such as Candelaria and later Tonopah).

The only product that could be competitive was cattle in which more and more of the agriculture of the valley concentrated. This continued for a long period; one of the last photos (1938) taken of a train on the C&C line (by then the Southern Pacific) shows a long cattle train coming up Montgomery Pass. As the mining areas died, the shipment of farm products to those areas fell, to the further detriment of Owens Valley agriculture.

The Virginia and Truckee line to Minden and the Nevada Copper Belt Railroad had some influence beneficial to agriculture, the Eureka and Palisade (Eureka Nevada) and the Nevada Central much less. None developed enough agricultural traffic to survive once ore shipments fell. None of the railroads

stimulated manufacturing, beyond the processing of ore.

A major question was whether building these railroads was economically justifiable. On a strict dollars-and-cents basis, two clearly earned sufficient profits in their early years to recover the original investment and earn a better than normal return. These were the Virginia and Truckee and the Tonopah and Goldfield. While their earnings declined as mining activity and traffic dwindled, the mining in Tonopah and Virginia City continued in sufficient volume long enough to provide a continued adequate return.

At the other extreme, the Bullfrog-Goldfield and the Las Vegas and Tonopah involved a duplicating waste of resources in some of the most inhospitable and unproductive country in the United States. Their construction was based on expectations that proved erroneous, and they failed to provide their parent roads with significant traffic. The Nevada Central and the Eureka and Palisade were almost as bad, providing some aid initially to mining and agriculture and to the communities but not nearly enough to warrant the investment. The Nevada Central was substantially weaker than the Eureka and Palisade.

The Tonopah and Tidewater was in an intermediate position. Owned by the principal borax firm, it was in a sense a plant facility. It did not earn a reasonable return itself, but it may well have been economically justified for the purposes of Pacific Coast Borax. But the Ludlow-Crucero portion and the portion north of Death Valley Junction constituted complete economic waste.

To some extent an intermediate statement can be made about the Nevada Copper Belt Railroad. It clearly did not in itself earn a sufficient amount to justify the investment, but the equation changes if considered in conjunction with its owner of earlier years, the Nevada Douglas Copper Company. The NCB developed some agricultural traffic, but not enough to survive, and did aid in the growth of Yerington.

The over-all economic effect of these nine lines was a substantial waste of resources, a product of unrealized expectations. The amounts invested in the C&C, the B-G and the LV&T, the E&P, the NC, and the end-segments of the T&T, would have been far more productive had they been placed in railroads in California and elsewhere, or in other lines of activity. But mining is an industry in which expectations tend to be overly optimistic. When successful, mining gave rise to large earnings, providing funds for extension of rail lines without market competition for funds. The Bank of California (Mills) interests are a prime example, as is the Tonopah Mining Company in building the B-G and the Clark interests in the LV&T. Thus consequences of these forces produced substancial distortion of real investment in the period.

Did the Railroads Operate Too Long?

Another major question concerns whether these railroads operated too long, in terms of the interests both of their owners (or creditors) and of the economy

generally? In varying degrees, all operated for years with little or no return on investment and for some years with operating deficits. For decisions about ceasing operations, a return-on-investment figure that is based on an estimate of costs of construction is not relevant; the only significant figures are the return on salvage value, and the costs of operating. Salvage value, though difficult to determine before abandonment, is usually only a small percentage of the original cost, and recalculated on this basis, the earnings picture would not look so bad. Failure to cover operating expenses, however, involves absorption of funds from some source. If there are reasonable expectations that conditions will improve, the owners are justified in continuing operation. With many of these roads there was strong conviction that conditions would improve, even though there was little rational basis for such a prospect, and only in one case was the hope in the end justified: The C&C did revive, but because of a completely unforeseen major ore discovery. If there are no such expectations, the prime reason why owners will continue to operate is their attachment to the railroad. To some of the owners and managements, continued operation itself became a crucial objective, and they would go on indefinitely if there were funds to do so. From all indications this was true of both W. L. Haenhlein of the T&G and Ogden Mills of the V&T, and the managers of the E&P and the NC as well.

Several of these roads demonstrated great ability to avoid operating deficits for very long periods—the C&C, the E&P, the NC, and the V&T, for example—despite low traffic volumes. In part this reflected efficiency in holding down expenses, that is, efficient management of limited resources and failure to cover depreciation charges, which do not have to be paid out on a current basis. In part it reflected the willingness of employees to work at wages lower than they could earn elsewhere, and in part it reflected deferring maintenance and failure even to charge accurate figures of depreciation. Deferred maintenance can go on, with a railroad, for long periods, not forever: Eventually the track becomes unsafe, derailments increase (though the latter did not occur to any extent with these lines), and breakdowns of equipment are frequent.[22]

The ability of the railroads to lose up to 85 percent of their revenues and still cover operating expenses for long periods is little short of miraculous, given the usual assumptions about fixed costs. They were of course not covering return on investment.

But a day of reckoning comes. The V&T was barely operable at the end, and the T&G and the two central Nevada roads were not much better. When the V&T was abandoned, there was widespread belief that the road could operate profitably with diesel power, as its volume of traffic was such that it should have been able to cover operating costs, but funds were not available to convert to diesel. The T&G at the end still had seven steam locomotives on hand, but none was operable, and it had neither funds nor, once ownership changed, any interest in converting to diesel.

Effects of Abandonment

Given the circumstances, there is little evidence that abandonment of the lines had any detrimental effects on the areas served, the avoidance of which would have justified public subsidy. Either there was little or no potential traffic, or trucks could handle most of the traffic at comparable cost, although some firms strongly protested abandonment. A substantially different view was taken by Michael Sheehan in 1979.[24] He argued that abandoning the railroads of the Owens Valley and surrounding areas, the result of private enterprise and inadequate regulatory measures, seriously deterred further mining development. This was, of course, written before modern advances in truck transport. A similar view was expressed to the author of this article in 1975 by an official of the Nevada Liaison Office of the United States Bureau of Mines.[25]

There were, of course, other effects of abandonment. One was the impact on employees, including management personnel, many of whom were committed to continued operation of the railroad, as noted earlier. For the lines from Goldfield south and the C&C especially, the employees had put up with unfavorable climate and living conditions and the psychological effects of living and rearing families in a deteriorating town. Yet, they were reluctant to see the end. The long-held fear of abandonment prevalent in the decade or so before it occurred was certainly depressing, but they stayed, one engineer serving thirty-eight years on the C&C and its successor. And to persons in the towns the daily arrival of the train was an important event—in some towns a very obvious one. In Tonopah, when the train pulled up the long straight grade into town the sound of the locomotive was so loud that one could barely carry on conversation in the main street.

Appendix

There follow financial data for the nine railroads.

Measurement of Financial Success and Economic Justification

For a railroad venture to be justified, it must earn, over and above railway operating income (revenue minus operating expenses and taxes), an average rate of return on the investment. But there are serious problems in precisely ascertaining this figure. A major problem with the railroads is that the reported figures of capital investment typically overstate the actual real cost. Not infrequently the reported figure shows the bonded debt plus the value of capital stock, which was in fact given to the contractors who built the road. Thus, for these railroads, it is assumed that the cost per mile of road and equipment was $15,000 in the period for the standard-gauge lines, and $l0,000 for the narrow-gauge lines. These figures are well below the reported figures of capital invest-

ment in line and equipment, which, if used, would make the financial picture of these lines look much worse. The necessary rate of return used is 5 percent. Thus the figures for necessary return and therefore for net financial gain or loss are valid only in terms of these assumptions about value of investment and rate of return.

A railroad's figures should be adjusted from year to year on the basis of improvements and depreciation, but in fact railroads in this era did not depreciate track, and the costs of improvements were not often accurately reported.

Another important element centers around the recovery of investment. To the extent that profits are earned as defined, in a sense the owners are getting their capital back, and the railroad no longer needs to earn a return on this. In reverse, if the required amounts are not covered then the base for the required returns should be raised to include these amounts. But information for this refinement is not adequate.

While the formula discussed above is useful in determining the economic justification of an undertaking, it does not indicate how long an undertaking should be continued. Obviously, if earnings are expected to continue at the present rate, a return is necessary only on the salvage value-what the property would sell for. Once a railroad is built, much of the capital can never be recovered by dismantling. But this figure is not known with any degree of accuracy in any one year. Obviously, if a firm is failing to cover operating expenses and taxes, it should close and recover salvage value unless it is expected that the situation will improve, a very common belief. In later years value was very low, for example, an estimated $25,000 for the Nevada Central.

There follow financial data for the nine railroad. Fiscal years end on June 30 through l9l6, and on December 31 thereafter; all data are in thousands of dollars. The source of data prior to 1888 is *Poor's Manual of Railroads* and after 1888, Interstate Commerce Commission, *Annual Reports*, respective years.

Table 1
Virginia and Truckee Railroad
(Miles: 1878-1910: 52; 1911-1940: 68; 1941: 58; 1942-1949: 46)

	(in thousands of dollars)			
Year	*Operating Revenue*	*Operating Expenses*	*Railway Operating Income after Taxes*	*Net Earnings after Necessary Return*
1879	1,388.3	835.5	552.0	513.0
1880	1,124.3	674.6	449.7	410.7
1881	914.3	519.7	394.6	355.6
1882	741.1	453.5	287.6	248.6
1883	705.2	411.0	294.2	255.2
1884	711.4	385.9	325.5	321.6
1885	599.1	316.4	282.7	243.7
1886	702.9	349.4	353.6	314.6
1887	720.4	361.4	369.4	322.4
1888	771.5	404.8	366.7	327.7
1889	729.4	390.1	339.7	300.4
1890	629.5	367.9	233.9	233.4
1891	634.3	348.3	263.0	247.6
1892	549.3	317.7	208.6	204.8
1983	407.8	283.0	102.8	63.8
1984	215.8	187.2	8.7	-30.3
1895	228.7	178.2	33.4	-5.6
1896	213.5	179.8	25.8	-13.2
1897	182.6	155.8	18.5	-20.6
1898	178.3	153.6	4.3	-34.7
1899	166.2	127.2	22.1	-16.9
1900	203.4	138.9	46.8	-7.8
1901	215.7	151.0	48.0	-9.0
1902	248.9	154.7	79.3	40.3
1903	308.8	177.1	116.6	77.6
1904	329.9	188.7	152.8	113.8
1905	623.8	258.3	355.5	316.5
1906	362.3	200.4	146.8	107.8
1907	295.5	182.4	98.0	59.0
1908	305.0	205.5	83.9	44.9
1909	295.3	180.1	98.8	59.8
1910	297.3	185.4	94.4	43.4
1911	300.3	208.1	73.0	22.0
1912	301.0	218.8	66.8	15.8
1913	299.8	212.8	65.9	14.9
1914	270.6	206.2	43.4	-7.6
1915	261.5	220.0	22.4	-28.6
1916	288.0	238.7	27.0	-24.0

continued next page

Virginia and Truckee Railroad continued

1917	280.9	211.1	47.9	-31.0
1918	266.8	203.8	34.7	-16.3
1919	310.5	235.8	46.3	-4.7
1920	390.0	287.4	56.8	5.8
1921	430.3	334.3	45.1	-5.9
1922	516.1	351.4	105.9	54.9
1923	442.7	328.0	49.5	-1.5
1924	328.9	295.6	-14.1	-65.1
1925	266.8	255.7	-25.2	-76.2
1926	225.0	223.6	-24.4	-75.4
1927	168.2	173.0	-26.5	-77.5
1928	166.1	167.7	-21.2	-72.2
1929	170.6	177.3	-26.2	-77.2
1930	136.5	149.7	-32.5	-83.5
1931	148.5	151.9	-19.8	-70.8
1932	130.4	138.2	-24.7	-75.7
1933	98.9	119.5	-34.0	-85.0
1934	110.5	111.8	-13.9	-64.9
1935	120.8	117.8	-6.3	-57.3
1936	119.7	119.8	-12.3	-63.3
1937	110.6	139.5	-41.3	-92.3
1938	92.2	93.5	-10.8	-61.8
1939	59.9	59.4	-3.0	-51.3
1940	91.2	90.6	-8.4	-59.4
1941	91.2	83.5	-0.8	-44.5
1942	145.3	89.0	32.6	-5.4
1943	88.7	117.6	-39.1	-77.1
1944	87.5	110.7	-33.2	-71.2
1945	108.0	123.1	-25.7	-63.7
1946	148.1	157.4	-22.9	-60.9
1947	171.3	173.0	-17.3	-55.3
1948	147.9	182.0	-43.2	-81.2
1949	119.4	151.7	-43.8	-81.8

Operation ended May 31, 1952.

Table 2
Carson and Colorado Railroad
(Miles: 1881: 158; 1882: 199; 1883-1904: 300)

	(in thousands of dollars)			
Year	*Operating Revenue*	*Operating Expenses*	*Railway Operating Income after Taxes*	*Net Earnings after Necessary Return*
1881	264.1	93.7	160.4	81.4
1882	442.3	196.1	246.1	146.1
1883	441.9	245.7	196.1	46.0
1884-87	–	–	–	–
1888	298.3	167.8	100.0	-50.0
1889	275.4	178.9	67.4	-82.6
1890	269.4	174.4	66.0	-84.0
1891	328.4	211.4	90.1	-74.7
1892	238.0	153.3	57.0	-97.0
1893	213.4	138.5	47.3	-106.7
1894	146.5	96.5	30.3	-123.7
1895	150.1	103.3	24.9	-129.1
1896	150.0	108.2	21.4	-133.6
1897	131.1	99.1	11.7	-138.3
1898	153.6	130.1	4.3	-145.7
1899	146.2	104.2	24.7	-125.3
1900	168.7	116.7	36.7	-113.3
1901	180.1	82.5	81.6	-66.6
1902	347.9	122.5	208.5	93.5
1903	466.2	188.1	265.5	115.5
1904	418.8	245.9	149.9	0.1

Table 3
Tonopah and Goldfield Railroad
(Miles: 1905: 65; 1906: 105; 1907: 106; 1909-16: 109; 1918-32: 113; 1936-46: 102)

	(in thousands of dollars)			
Year	*Operating Revenue*	*Operating Expenses*	*Railway Operating Income after Taxes*	*Net Earnings after Necessary Return*
1905	837.0	390.9	–	–
1906	948.9	516.2	428.7	350.0
1907	2,380.9	1,287.1	1,050.7	972.0
1908	1,517.6	1,083.8	378.3	164.0
1909	910.0	686.6	182.6	101.0
1910	789.2	585.1	167.8	86.0
1911	789.0	560.9	198.2	116.0
1912	760.4	460.7	269.8	188.0
1913	696.4	371.1	297.6	216.0
1914	688.9	410.9	247.0	165.0
1915	682.7	364.2	278.8	197.0
1916	681.8	355.1	284.1	202.0
1917	625.1	311.7	249.6	168.0
1918	472.7	312.9	91.4	6.0
1919	481.5	341.1	88.8	4.0
1920	464.2	360.0	62.2	-23.0
1921	378.9	313.5	20.1	-65.0
1922	420.9	319.5	37.6	-47.0
1923	412.7	292.7	46.3	-39.0
1924	360.2	293.6	22.3	-63.0
1925	345.2	291.9	10.0	-75.0
1926	271.8	256.2	-27.2	-112.0
1927	282.0	240.9	-1.8	-87.0
1928	287.7	240.0	6.8	-79.0
1929	290.8	232.8	11.1	-74.0
1930	208.7	191.8	-22.2	-63.0
1931	150.2	138.6	-17.7	-67.0
1932	120.3	99.8	3.0	-74.0
1933	115.5	95.6	4.0	-73.0
1934	169.5	124.6	25.7	-51.0
1935	210.5	162.3	25.6	-51.0
1936	198.5	166.1	12.7	-64.0
1937	179.0	164.7	-3.1	-80.0
1938	141.5	136.5	-7.4	-84.0
1939	126.6	133.7	-18.7	-96.0
1940	117.9	123.2	-16.9	-94.0
1941	131.1	128.1	-6.4	-83.0

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Tonopah and Goldfield Railroad continued

1942	173.9	148.7	12.9	-64.0
1943	257.3	229.9	-1.4	-78.0
1944	494.0	393.4	62.8	-14
1945	427.6	456.4	-64.3	-13.0
1946	70.6	128.8	-71.2	-94.0

Table 4

Tonopah and Tidewater Railroad

(Miles: 1906: 60; 1907: 102; 1908-17: 180; 1939: 169)

(in thousands of dollars)

Year	*Operating Revenue*	*Operating Expenses*	*Railway Operating Income after Taxes*	*Net Earnings after Necessary Return*
1907	42.0	47.2	127.7	52.7
1908	352.5	220.7	129.7	-11.6
1909	458.3	299.4	137.6	2.6
1910	421.5	278.7	128.8	-6.2
1911	317.4	233.9	61.0	-47.5
1912	291.4	197.3	75.9	-59.5
1913	328.2	191.7	121.1	-10.8
1914	340.4	204.7	116.2	-18.8
1915	323.0	207.5	97.9	-37.1
1916	433.9	221.6	191.8	56.8
1917	469.4	199.2	244.0	119.0
1918	347.8	222.4	84.8	-40.2
1919	423.2	443.5	153.7	28.7
1920	594.3	337.6	222.1	97.1
1921	177.5	215.3	-67.2	-192.2
1922	441.7	273.9	131.6	6.6
1923	537.3	266.4	230.4	105.4
1924	401.8	299.3	102.5	-22.5
1925	406.8	291.3	70.9	-54.1
1926	445.1	274.2	128.8	3.8
1927	304.0	261.2	6.0	-119.0
1928	224.8	249.6	-57.5	-182.5
1929	233.0	239.6	-40.3	-165.3
1930	233.0	239.6	-40.3	-165.3
1931	177.5	215.3	-67.9	-192.9
1932	87.1	158.3	-89.3	-214.3
1933	76.0	140.6	-81.7	-206.7
1934	109.7	135.1	-43.0	-168.0
1935	124.2	149.0	-35.8	-160.8

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Tonopah and Tidewater Railroad continued

1936	101.4	153.1	-64.8	-189.8
1937	101.7	154.4	-67.8	-192.8
1938	90.1	177.4	-104.9	-229.9
1939	95.5	154.1	-72.2	-197.2
1940	42.3	70.1	-33.8	–

Table 5

Bullfrog-Goldfield Railroad

(Miles: 1908-15: 83; 1916-17: 87; 1917-27: 78)

(in thousands of dollars)

Year	*Operating Revenue*	*Operating Expenses*	*Railway Operating Income after Taxes*	*Net Earnings after Necessary Return*
1908	92.2	118.4	-37.5	-97.5
1909	177.7	163.8	4.8	-55.2
1910	128.6	132.4	-18.8	-78.8
1911	99.7	132.1	-43.4	-103.4
1912	100.2	99.4	-7.2	-67.2
1913	99.0	92.8	-1.1	-61.1
1914	85.0	91.3	-14.6	-74.6
1915	126.6	101.3	23.4	-41.6
1916	142.6	103.9	30.9	-34.1
1917	144.3	87.2	18.9	-46.1
1918	78.5	76.5	-5.6	-65.6
1919	77.0	78.6	-9.4	-69.4
1920	66.6	84.6	-27.9	-87.9
1921	73.8	83.9	-21.7	-81.7
1922	68.5	106.9	-38.7	-98.7
1923	61.1	100.8	-50.7	-110.7
1924	59.1	77.9	-25.7	-85.7
1925	53.6	80.7	-34.1	-94.1
1926	42.6	76.3	-43.0	-103.0
1927	51.6	68.8	-26.6	-86.6

Table 6
Las Vegas and Tonopah Railroad
(Miles: 1907: 135; 1908-14: 199; 1914-18: 118)

	(in thousands of dollars)			
Year	*Operating Revenue*	*Operating Expenses*	*Railway Operating Income after Taxes*	*Net Earnings after Necessary Return*
1907	428.2	193.1	219.9	118.9
1908	486.6	433.8	28.5	-71.5
1909	304.4	286.3	-27.0	-177.0
1910	162.6	206.0	-74.8	-224.0
1911	148.0	185.7	-59.7	-207.4
1912	194.6	184.3	-9.2	-159.2
1913	196.7	191.5	-10.5	-160.5
1914	194.1	189.5	-14.6	-164.6
1915	135.0	107.8	20.1	-69.9
1916	140.1	107.8	22.7	-67.3
1917	100.1	83.4	4.5	-65.5

Table 7
Nevada Copper Belt Railroad
(Miles: 1911: 31; 1912-34: 41; 1935-40: 30; 1931-46: 29)

	(in thousands of dollars)			
Year	*Operating Revenue*	*Operating Expenses*	*Railway Operating Income after Taxes*	*Net Earnings after Necessary Return*
1911	33.7	33.4	–	–
1912	131.1	86.1	49.4	18.6
1913	225.9	110.1	104.6	73.8
1914	165.6	95.3	63.0	32.2
1915	75.8	62.9	6.0	-24.8
1916	75.0	50.3	20.5	-10.3
1917	251.1	111.1	133.9	103.1
1918	309.8	220.5	81.8	51.0
1919	116.0	94.2	16.2	-14.6
1920	73.0	81.8	-14.3	-45.1
1921	86.9	75.7	-1.1	-31.9
1922	89.9	72.9	12.5	-18.3
1923	96.8	71.1	21.5	-9.3

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Tonopah and Goldfield Railroad continued

1924	117.3	68.8	35.6	4.8
1925	130.4	76.7	40.6	9.8
1926	143.0	103.9	25.1	-5.7
1927	173.7	87.6	71.7	40.9
1928	192.7	104.3	72.9	42.1
1929	130.9	77.0	42.1	11.3
1930	77.0	62.5	5.2	-25.6
1931	67.2	62.2	-2.0	-32.8
1932	43.0	43.8	-5.6	-31.4
1933	33.6	31.4	-2.1	-32.9
1934	34.3	30.9	0.7	-21.8
1935	27.9	33.6	-5.8	-31.6
1936	–	–	–	–
1937	–	–	–	–
1938	35.1	34.5	-2.4	-24.9
1939	35.7	50.3	-17.6	-39.4
1940	31.5	-19.1	9.1	-12.7
1941	37.6	34.3	-0.1	-21.9
1942	49.1	62.1	-13.9	-35.7
1943	72.3	90.3	-24.1	-45.9
1944	55.0	73.6	-23.3	-45.0
1945	61.9	70.1	-15.1	-36.9
1946	51.3	54.3	-8.5	-30.3

Table 8
Eureka and Palisade Railroad (later Eureka Nevada Railway)
(Miles: 84)

	(in thousands of dollars)			
Year	*Operating Revenue*	*Operating Expenses*	*Railway Operating Income after Taxes*	*Net Earnings after Necessary Return*
1881	385.2	189.2	195.9	153.9
1882-87	–	–	–	–
1888	137.6	61.1	64.5	22.5
1889	94.0	48.8	32.6	-9.4
1890	102.6	63.2	29.3	-12.7
1891	112.1	60.7	41.4	-0.6
1892	115.9	66.7	39.4	-2.6
1893	102.3	60.8	32.1	-9.9
1894	65.1	35.5	22.9	-19.1
1895	51.2	33.9	11.3	-30.7
1896	59.0	39.1	13.8	-28.2
1897	59.1	34.7	18.5	-23.5
1898	58.6	35.7	17.9	-24.1
1899	55.4	38.4	12.0	-30.0
1900	64.8	36.6	24.0	-18.0
1901	58.8	41.0	12.9	-29.1
1902	53.9	51.5	-2.7	-44.7
1903	54.9	38.4	12.5	-29.5
1904	52.9	37.2	11.0	-31.0
1905	48.1	36.2	7.4	-34.6
1906	70.7	65.3	1.3	-40.7
1907	112.7	103.4	–	–
1908	86.5	105.3	14.3	-27.7
1909	129.4	125.2	-0.3	-46.7
1910-12	–	–	–	–
1913	55.9	45.4	10.5	-31.5
1914	54.6	37.4	14.9	-27.1
1915	52.9	12.8	24.3	-17.7
1916	71.8	33.1	37.0	-5.0
1917	84.6	76.8	49.6	7.6
1918	62.3	40.1	13.6	-28.4
1919	83.7	54.8	24.2	-17.8
1920	148.0	99.2	41.0	-1.0
1921	99.1	85.1	8.0	-34.0
1922	68.6	59.9	4.0	-38.0

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Eureka and Palisade Railroad continued

1923	210.6	168.9	30.8	-11.2
1924	140.7	107.7	23.6	-18.4
1925	111.9	89.4	15.8	-26.2
1926	–	–	–	–
1927	75.6	86.4	-17.1	-59.1
1928	63.3	62.1	-3.5	-45.5
1929	71.0	67.4	-0.3	-42.3
1930	42.6	54.4	-15.8	-26.2
1931	41.8	40.5	-1.6	-43.6
1932	38.7	41.5	-5.6	-47.6
1933	28.6	25.2	0.2	-41.8
1934	61.9	53.3	4.4	-37.6
1935	40.7	45.8	-8.1	-50.1
1936	38.0	40.3	-5.0	-47.0
1937	41.4	42.4	-5.6	-47.6
1938	Abandoned September 27, 1938			

Table 9
Nevada Central Railway
(Miles: 93)

(in thousands of dollars)

Year	*Operating Revenue*	*Operating Expenses*	*Railway Operating Income after Taxes*	*Net Earnings after Necessary Return*
1880	108.5	–	–	–
1881	147.6	127.6	20.0	-27.0
1882	110.4	115.5	5.1	-41.9
1883-85	–	–	–	–
1886	77.8	60.4	-2.6	-49.6
1887	70.8	63.6	7.2	-39.8
1888	43.4	45.8	-5.7	-52.7
1889	45.6	41.6	-7.6	-54.6
1890	37.7	40.0	-19.0	-66.0
1891	33.5	37.2	-12.4	-59.4
1892	42.5	40.5	-7.1	-54.1
1893	39.9	34.2	-13.7	-60.7
1894	28.7	27.4	-7.1	-44.1
1895	25.2	26.1	-8.9	-55.9
1896	31.5	26.8	-2.8	-47.3
1897	39.9	30.1	1.8	-45.2

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Nevada Central Railway continued

1898	47.8	32.6	8.0	-39.0
1899	28.2	25.6	-4.3	-51.3
1900	31.9	22.7	2.6	-44.4
1901	34.3	30.5	0.2	-46.8
1902	38.5	31.5	4.2	-42.8
1903	40.1	26.1	8.0	-39.0
1904	29.2	25.6	-2.3	-49.3
1905	35.7	21.8	8.7	-40.3
1906	61.3	31.1	25.5	-21.5
1907	84.6	54.2	25.4	-20.5
1908	75.5	63.9	6.1	-40.9
1909	75.4	52.2	17.9	-29.1
1910	60.1	83.9	-28.1	-75.1
1911	84.6	47.8	32.6	-9.4
1912	59.8	47.2	8.6	-38.4
1913	55.0	47.4	9.4	-37.6
1914	48.8	38.7	5.4	-41.6
1915	45.5	32.9	8.9	-38.1
1916	45.7	34.4	9.5	-37.5
1917	68.1	36.4	29.6	-17.4
1918	53.2	40.2	10.7	-36.3
1919	41.1	38.5	-0.2	-47.2
1920	50.5	46.0	1.8	-45.2
1921	39.6	35.1	2.5	-44.5
1922	43.6	39.4	1.0	-46.0
1923	47.4	44.2	0.0	-47.0
1924	52.4	46.1	3.1	-43.9
1925	44.8	52.0	-10.6	-57.6
1926	50.9	48.4	-0.9	-47.9
1927	43.6	44.7	-4.5	-51.5
1928	43.0	37.3	3.7	-43.3
1929	46.0	40.5	2.9	-44.1
1930	38.8	38.5	-2.5	-49.5
1931	40.7	36.8	1.7	-45.3
1932	25.3	31.7	-8.5	-55.5
1933	20.3	20.3	2.2	-49.2
1934	30.0	26.6	1.4	-45.6
1935	27.1	28.4	-2.8	-49.8
1937	22.1	27.9	-8.4	-55.4
1938	Abandoned January 1938			

NOTES

[1]David F. Myrick, *Railroads of Nevada and Eastern California* (Berkeley, California: HowellNorth, 1962), Vol. 1, 136-61; Gilbert Kneiss, *Bonanza Railroads* (Stanford: Stanford University Press, 1941), 49-78; Lucius Beebe and Charles Clegg, *Virginia and Truckee* (Oakland, Calif.: Grahame Hardy, 1949); *Steam Cars to the Comstock* (Berkeley, California: Howell-North, 1951).

[2]John F. Due, "The Carson and Colorado Railroad," *Economic Geography*, 27 (July 1951), 25l67; John B. Hungerford, *The Slim Princess* (Reseda: Hungerford Press, 1956); Myrick, *Railroads*, Vol. 1, 136-61; George Turner, *Slim Rails through the Sand* (Long Beach, Calif.: Johnston and Howe, 1963); Interstate Commerce Commission, 175 ICC 580, *Central Pacific Railway Co. et. al. Abandonment*, (1931); *idem*, 199 ICC 255, *Central Pacific Railway Co. et. al. Abandonment*, (1934).

[3]The best account of Belleville and Candelaria is provided by Hugh A. Shamberger, *The Story of Candelaria and Its Neighbors* (Carson City: Nevada Historical Press, 1978).

[4] Details are provided in Myrick, *Railroads*, Vol. 1, 236-87; Interstate Commerce Commission, 133 ICC 862, *Tonopah and Goldfield RR, Valuation Docket* 1927; Tonopah and Goldfield Railroad, *Annual Reports*, 1906-12. Developments in the Tonopah-Goldfield area are described in Russell R. Elliott, *Nevada's Twentieth-Century Mining Boom* (Reno: University of Nevada Press, 1966).

[5]The story of Goldfield is told very effectively by Sally Springmeyer Zanjani, *Goldfield* (Athens, Ohio: Swallow Press, 1992). Her father was a prominent lawyer in Goldfield in the boom period. See also Hugh A. Shamberger, *Goldfield* (Carson City: Nevada Historical Press, 1982).

[6]Interstate Commerce Commission, 131 ICC 465, *Abandonment of Part of Line by Tonopah and Goldfield Railroad Co. (*1927).

[7]The best source is Myrick, *Railroads*, Vol. 2, 544-92. See also Interstate Commerce Commission, 236 ICC 265 (1939), on the abandonment application.

[8]The story of Smith's involvement in borax and railroads is provided in George H. Hildebrand, *Borax Pioneer: Francis Marion Smith* (Berkeley, California: Howell-North Books, 1982).

[9]Myrick, *Railroads*, Vol. 2, provides the only over-all summary of the history of the BullfrogGoldfield Railroad. Note also Interstate Commerce Commission, 131 ICC 513, *Abandonment of Line by Bullfrog-Goldfield Railroad. Co.* (1927).

[10]Myrick, *Railroads*, Vol. 2, 454-503.

[11]Myrick, *Railroads*, Vol. 1, 214-28; Interstate Commerce Commission, 84 ICC 427, *Nevada Copper Belt Ry. Co.: Valuation Docket 280* (1927).

[12]Kneiss, *Bonanza Railroads*, ch. 4; Interstate Commerce Commission, 228 ICC 733, *Eureka Nevada Railway Co. Abandonment (*1933).

[13]Kneiss, *Bonanza Railroads*, ch. 5; Interstate Commerce Commission, *Nevada Central Railroad Co. Abandonment* (1937).

[14]The role of Oddie in the Nevada Central is indicated in William A. Douglass and Robert A. Nylen, eds., *Letters from the Nevada Frontier:Correspondence of Tasker L. Oddie* (Norman: University of Oklahoma Press, 1992).

[15]In 1938 the line was operating a mixed train one day a week. A 1934 request to abandon was denied, but the 1937 request was approved. See Interstate Commerce Commission, 199 ICC 255, *Central Pacific Railway Co. et al. Abandonment (*1934), and 224 ICC 291, *Central Pacific Railway Co. et al. Abandonment (*1937). The original 35-pound rail was still in use. One engine was required for every six cars over Montgomery Pass. The Mina line was later abandoned south of Hawthorne, and the portion south of Wabuska was taken over by the United States government to serve the Naval Ammunition Base at Hawthorne.

[16]Interstate Commerce Commission, 236 ICC 265, *Tonopah and Goldfield Abandonment* (1939). Abandonment was strongly opposed by the Nevada Public Service Commission.

[17]Interstate Commerce Commission, 236 ICC 265 (1937) gives details.

[18]*Ibid.*, 131 ICC 513, *Abandonment of Line of the Bullfrog-Goldfield Railroad Co.* (1927).

[19]From 1910 to 1927, total revenue was $901,157, expenses $529,471; net after taxes $331,725. The reported cost of the line was $792,162.

[20]Interstate Commerce Commission, 228 ICC 733, *Eureka Nevada Railway Co. Abandonment*

(1933).

[21]This was true also of the Nevada Northern in eastern Nevada and the Deep Creek, along the Utah-Nevada border, not included in the study.

[22]Robert A. Sauder, *The Lost Frontier* (Tucson: University of Arizona Press, 1994). This is an excellent source of information on the Owens Valley.

[23]When the NCB closed down, the V&T acquired the NCB's principal locomotive—substantially heavier than the old V&T engine. This change apparently resulted in damage to the rails sufficient to speed abandonment.

[24]"The Historical Impact of Infrastructure on Exploration and Mining Development in the Greater Mojave," Ch. 5 in "The Theory of Limiting Utility Applied to the Distribution of Natural Resources in Arid Areas" (Ph.D. diss., University of California, Riverside, 1979).

[25] Letter from Paul Fillo, U.S. Bureau of Mines, Carson City, Nevada, May 2, 1975.

THE TONOPAH BELMONT DEVELOPMENT COMPANY
Its Beginning and Formation

David Fairall

Producing more than $39 million for its owners, the famous Tonopah Belmont Development Company was the second most productive mining company in Tonopah history, surpassed only by the adjacent Tonopah Mining Company.[1] Historians agree about how the Tonopah Belmont ended, but not about how it began. Most written accounts of this great mining company ignore the beginnings or include only vague or incomplete reports that often conflict with each other. A reader of the company's history is left to wonder who located and mined the property initially, how many claims there were, and who owned them.

Several authors, writing about the people and town of Tonopah, have briefly mentioned locators and miners of the property. Loren Chan's *Sagebrush Statesman: Tasker L. Oddie of Nevada* simply states, "On lands adjacent to the holdings of the Tonopah Mining Company, he [Tasker L. Oddie] located some promising claims."[2] In "The History of Fifty Years of Mining at Tonopah, 1900-50," Jay A. Carpenter writes at length about the start of the major Tonopah operating companies. Describing the origins of the Tonopah Belmont Development Company, he also states that Tasker L. Oddie owned part of the claims.[3] In a later section, under the title "Men of Early Tonopah Days," Carpenter adds a little more information. He writes that Cal and Wils Brougher with Tasker Oddie sank a shaft that later was a large producer for the Tonopah Belmont.[4] Francis Church Lincoln's book *Mining Districts and Mineral Resources of Nevada* gives a lot of helpful statistical information, but never mentions any names. Recently William Douglass and Robert Nylen compiled some of Tasker Oddie's private correspondence in the book *Letters from the Nevada Frontier: Correspondence of Tasker L. Oddie, 1898-1902.*[5] In these letters to his mother, Tasker Oddie never mentions anyone else involved with him in these claims. In his book *A History of Tonopah, Nevada,* Robert McCracken retells the information from Jay Carpen-

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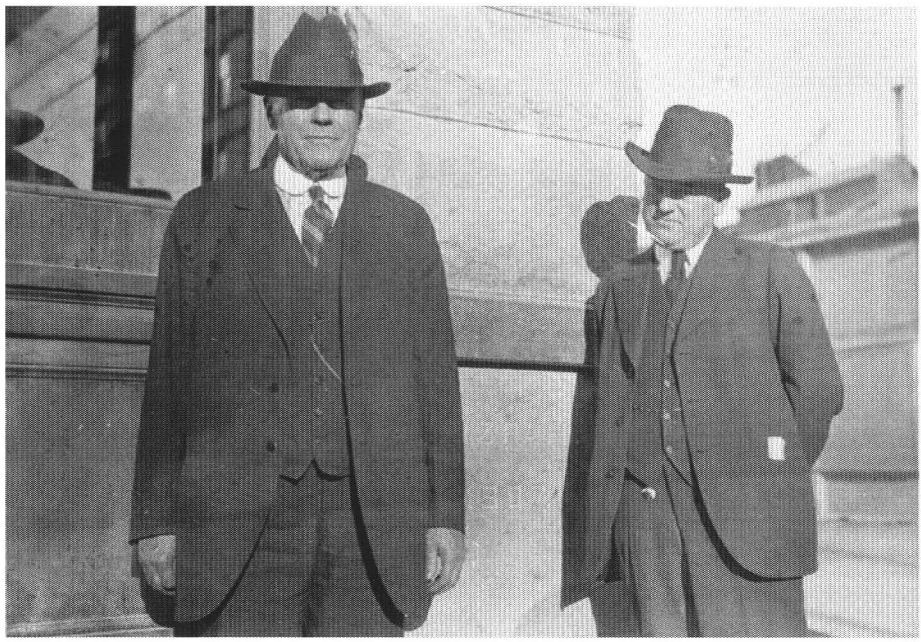


Cal Brougher and George Wingfield *(Nevada Historical Society)*

ter stated above, but gives no new information on the people involved.[6]

It seems natural that historians would mention already famous men founding famous mining companies. Tasker Oddie had become a wealthy mine owner in Tonopah. He either owned or was a large shareholder in more than a dozen mining companies, and Oddie was later elected governor and then United States senator from Nevada. The Brougher bothers also became men of wealth and power in Tonopah and the state of Nevada. Oddie and the Brougher brothers had mountains in Tonopah named after them. However, were there other men involved? After all, the Tonopah Belmont Development Company's property comprised 161 acres;[7] locating and developing all those mining claims would have been too much work for just three men.

Just how many mining claims did the Tonopah Belmont Development Company include? Accounts vary greatly. Francis Lincoln writes that the Tonopah Belmont mine consisted of 11 claims but gives no titles of the claims.[8] Jay Carpenter mentions that the Tonopah Belmont Development Company incorporated in early 1902 to develop a group of eight claims, but he also fails to mention any claim titles.[9] In May 1903, John Moore published the magazine *Tonopah* in San Francisco to encourage Californians to invest in the many mining companies of Tonopah. In its first issue, *Tonopah* states in the article "Tonopah's Great Mines" that the property of the Tonopah Belmont Development Company included nine whole and fractional claims as well as a tunnel.[10] Later, Mr.

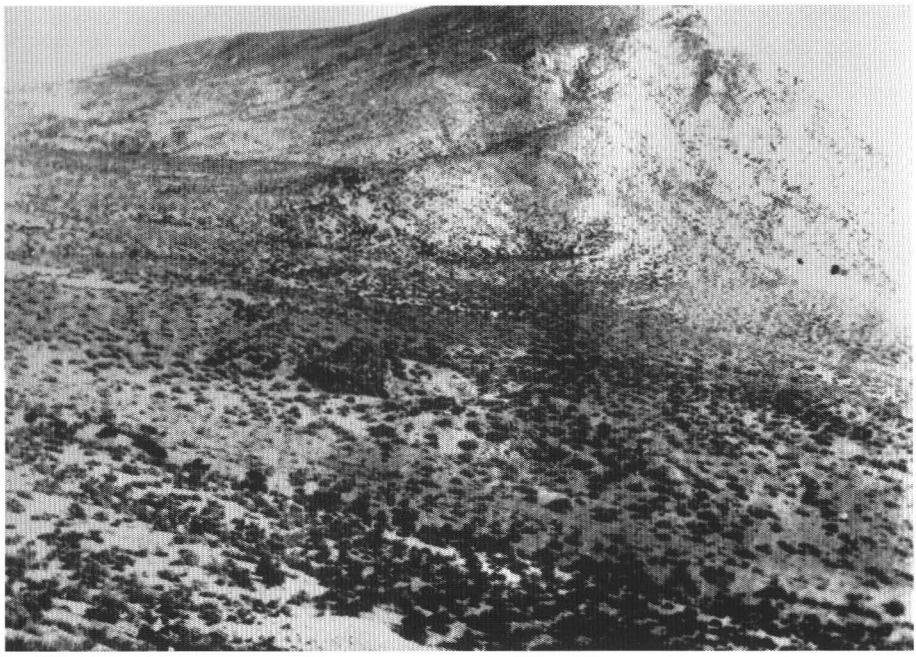
Moore states that there were eleven claims and a tunnel.[11] Apparently, the *Tonopah Bonanza* weekly newspaper had a difficult time deciding just how big this new mining company really was. In one issue it reports that the new Belmont Company owned tunnel rights to the whole mountain (Mount Oddie) and eleven claims.[12] A few months later, another *Tonopah Bonanza* issue shrinks the company's assets to only seven claims—and without consulting the company's board of directors.[13] Finally the *Bonanza* reports the Belmont mine as owning a total of ten claims.[14] Not to be left out of the guessing game, the *Tonopah Miner* published its own version, reporting that the Belmont mine owned twelve claims and a tunnel.[15]

After reviewing this information, we find that the basic question remains unanswered: Who were the pioneering men who started the fortunes of the Tonopah Belmont Development Company and what were their mining claims? Although the written histories have not given a clear, detailed answer to this question, a careful search of the public records and published material reveals much about the early history of the Tonopah Belmont mine. Three different mining companies became the Tonopah Belmont Development Company.[16] They were the Tonopah Tunnel and Mining Company, the Acenith Mining Company, and the Tonopah Belmont Mining Company.[17] This article discusses the first of these companies and its founders.

Tonopah Tunnel and Mining Company

To understand best why Tonopah's pioneer mining men formed this important company, we need to go back to the first days of a new mining camp called Butler. In November 1900, Jim Butler had filed his rich and lucrative claims with the Nye County recorder's office.[18] Soon after, he and his partners started the very successful leasing program of these original claims.[19] The new mining camp then came to be called Tonopah. These claims had many veins of silver running through them, with the Mizpah, Valley View, and Burro ledges bearing the main bodies of ore.[20] Those miners not able to lease or unwilling to work for the lessors filed their own claims to the north, west, and south of the Butler claims, hoping to strike it rich.

However, one thing was becoming apparent to the mining men. The rich Mizpah, Valley View, and Burro ledges all seemed to converge east of the Jim Butler claims, directly under Mount Oddie. Many miners in the early camp knew this, but no one exploited the knowledge. They probably did not have the energy, money, or time. Mining conditions of the infant camp were very primitive. Miners dug the ore using hand picks, shovels, and/or single jacks. They then hoisted the ore out of the earth using hand-powered windlasses. Horse-powered whims and gas-powered donkey engines did not appear until later. This made the task of working a miner's own lease very slow, tedious, and labor intensive. The miners' living environment was also very primitive.



This is a very early 1901 photo taken of Mt. Oddie, Butler (later Tonopah), Nevada, looking northeast. The H. & G. Tunnel entrance, the only diggings visible, is the black mark in the middle right side of the photo. This photo was taken near the present intersection of Valley View and McCulloch. *(Photo courtesy of Central Nevada Historical Society)*

Most people were eating cold food because fuel was very expensive and scarce, and they lived in tents or dugouts. It was not until mid-1901 that framed buildings slowly started to replace those tents and dugouts.

Also, most miners coming to the camp had little money with them, and that was needed for food or basic mining equipment to work their leases. Being short of money, they lived hand to mouth for months in the hope of striking it rich. If they did manage to develop rich ore, the money was slow in coming. After raising the ore from the bottom of the mine shaft by hand, the miners sacked and loaded it onto freight wagons. Mule teams hauled the freight wagons sixty miles—four to five days travel time—northwest to Sodaville, Nevada.[21] Here, workers loaded the ore onto the Carson and Colorado Railroad for shipment to smelters in San Francisco or Salt Lake City. The smelters then processed the ore and sent a check to the lucky miner. Exploring to the east would also take time, something the leasers could not waste. Their leases ran out at midnight, December 31,1901,[22] and their one opportunity at striking it rich would be gone. Better to work where others had already found rich ore than go exploring, hoping to find more. Some mining men also doubted that the great-

est silver ledges were untapped under Mount Oddie. Many felt the ledges died out east of the Butler claims and that the main body of ore was in the Butler claims themselves.

Arriving separately during the winter of 1900-1901, Robert C. Gordon and Dr. Alonzo Lee Hudgens[23] sized up the situation and concurred that the veins converged under Mount Oddie. It seemed, however, that mining men had claimed all the choice ground around Mount Oddie. Then they noticed that the others had ignored the entire south side of the mountain. Here, they realized, was their chance. If they could dig into the mountain, maybe they could cross the eastern end of the Mizpah, Valley View, and Burro ledges and claim big riches for themselves. Great potential lay before them, but they had a lot of work ahead. They could not do it alone, and they would need to pool their resources. Realization of their plans would take time, patience, energy, a lot of luck, and all their money. They finally decided to doubt the doubters and invest all they had, believing they would strike the east end of the famous ledges.

In a bold and risky move, on March 12, 1901, Hudgens and Gordon located the Hudgens and Gordon Tunnel. The H & G Tunnel was located on the south side of Mount Oddie and proceeded due north directly through the mountain. Its dimensions were six-and-one-half feet high by five feet wide.[24] Most newspapers commonly called this tunnel the G. & H. Tunnel, despite the fact that the original tunnel claim says the H. & G. Tunnel. Also, there is a 1902 mining claim map of the Tonopah Mining Area that shows the tunnel location and its name as the H. & G. Tunnel.[26]

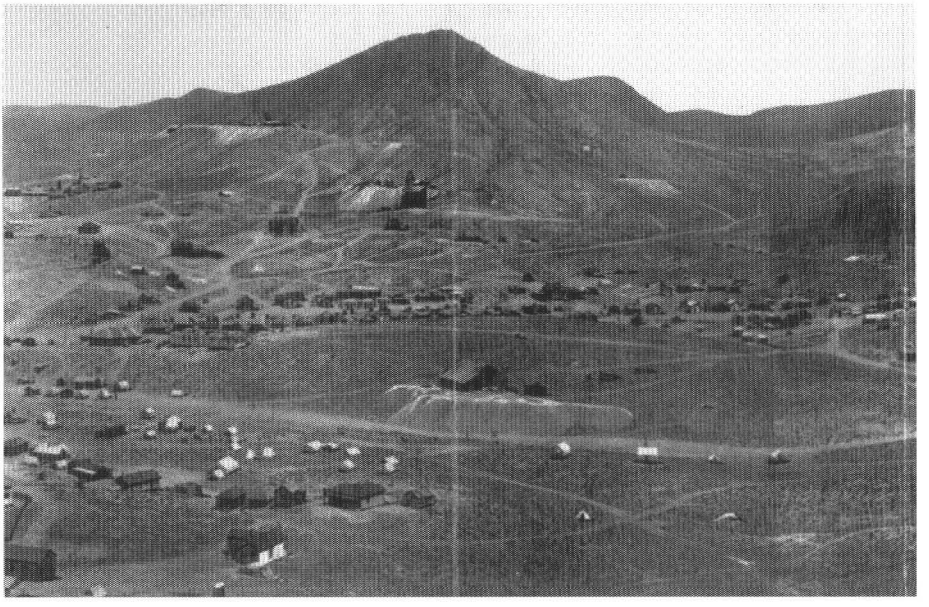
Hudgens and Gordon worked fast and hard to prove the doubters wrong. The tunnel proceeded south to north through the center of the mountain. Hudgens and Gordon planned to cut along the east side of the original Jim Butler group and claim their rich veins of silver. They realized that if they filed standard mining claims, they would have to find surface lode bearing ore and be able to claim only 1,500 feet on the sides of the mountain. Instead, they very smartly—filed a tunnel claim. This gave them the ability to tunnel up to 3,000 feet directly into Mount Oddie. Thus they acquired the opportunity of filing standard mining claims off their tunnel inside the mountain and direct control through the mountain of an area 3,000 feet by 1,500 feet.[27] Now they controlled the entire east side of the mountain.

Despite striking a small body of water,[28] Hudgens and Gordon worked diligently and soon hit paydirt. On May 7, 1901, they jointly located the Occidental mining claim,[29] and filed an Additional and Amended Certificate of Location on May 25.[30] At the time, the Occidental claim had on its west border the famous Desert Queen claim and on its north border the mouth of the Hudgens and Gordon Tunnel.[31] The Occidental later acquired on its northern border the Del Monte and Silver State claims, on the southern border the Stone Cabin and Rescue claims, and on the east border the Eula claim.[31]

The tunnel plans of Hudgens and Gordon caught the attention of the entire

camp. The *Tonopah Bonanza,* Tonopah's first newspaper, impressed with the importance of the tunnel, featured numerous articles about the tunnel property. The *Bonanza's* first issue, June 15, 1901, states.

> This enterprise [the H. & G. Tunnel] is being forwarded with all due diligence and will be pushed vigorously until the ledge belt is crossed. It is a promising proposition and just as soon as ore is encountered the value of the territory through which it runs can only be approximated.



E.W. Smith took this panoramic photo of Tonopah, circa 1904, from high up Mt. Butler. The building under construction in the middle left side dates this photo. The city built it in 1904, and then, immediately to its right, they would build the courthouse in 1904. This view looks northeast, showing the extensive diggings added to Mt. Oddie since early 1901. The H. & G. Tunnel, with tailings and dirt road, is clearly visible high up on the south side of Mt. Oddie. The famous Mizpah mine is visible in the upper left. Above and to the right of the Mizpah is the Northstar Mine, the highest mine located on Mt. Oddie. Below and to the right of the Northstar Mine is the mansion where the Superintendent of the Tonopah Mining Company lived. The Desert Queen Mine, above right of the mansion, was extensively used to develop the Silver Queen mining claim. *(Photo courtesy of the Bancroft Library, University of California, Berkeley)*

Then a week later, on June 22, 1901,

> Mining men who are not only theoretical but practical also, contend that the major ore body will be encountered under the big peak toward which the ledges all trend and, at no distant day, through the medium of the G. & H. tunnel site and winces there from deeper in the earth this idea will be proven either pro or con.

While others worked their own claims or leases and wondered whether the tunnel would work, several of Tonopah's important mining men who believed in the tunnel joined the effort. The *Tonopah Bonanza* reports that, "Dan O'Keefe sold his interest for $650. Billy Sinclair sold his interest in the tunnel property for a snug sum. In July, 1901, the interests of O'Keefe and Sinclair were purchased by Messrs. Brougher and Oddie."[33] No legal documentation has been found to support this information given by the *Bonanza*. However, the *Bonanza* was correct that Cal Brougher and T. L. Oddie had purchased an interest in the tunnel property. In September 1901, Tasker Oddie wrote to his mother, "I own one fifth of the tunnel right on Oddie Mountain. It will probably be worth a great deal of money before the year is out, as it holds the right to the extenuation [*sic*] of the main ledge of this camp, the 'Mizpah'."[34] The Nye County Assessor's Office records support the fact that Brougher and Oddie bought into the tunnel property. The assessor's records state that on July 3, 1901, A. L. Hudgens and R C. Gordon sold to H. C. "Cal" Brougher a one-fifth interest in the H. & G. Tunnel and a one-fifth interest in the Occidental claim for $1,000.[36] Records there also state that on October 18, 1901, A. L. Hudgens and R. C. Gordon sold to T. L. Oddie one-fifth interest in the H. & G. Tunnel and one-fifth interest in the Occidental claim for $1,000.[36] On the same day, Pat Manning joined the group as an equal partner.[37] It is interesting that he paid only $1 for his one-fifth interest in the tunnel and one-fifth interest in the Occidental claim. The *Tonopah Bonanza* mentions that Pat Manning was working in the tunnel several months before October.[38] It could be that Manning, traded his time working in the tunnel to acquire his one-fifth interest.

Work steadily progressed. In August, the tunnel was 160 feet deep[39] despite the fact that Pat Manning had part of the tunnel cave in on him, causing cuts to his head and bruises to his back.[40] With diligent work continuing on the tunnel, by September it was 250 feet long. At this point, the *Tonopah Bonanza* reported that the miners encountered stringers of quartz and "the formation was changing and property is now coming in. Assays made within a few days show considerable iron, three ounces in silver and a trace of gold."[41]

They quickly filed a mining claim and called it the Silver State. Roben C. Gordon, A. L. Hudgens, Tasker L. Oddie, Cal Brougher and Pat Manning located the Silver State claim on September 28, 1901. Dr. John G. Booker, Deputy United States Mineral Surveyor for the District of Nevada, surveyed the claim on October 11, 1901.[42] On October 13, Hudgens requested that this Certificate of Survey be filed.[43] At the request of Hudgens, on December 3 the partners

This typical prospector is heading out of town with his team of burros to find the next bonanza! The old wooden Catholic church is visible in the background. Note the mine framework and tailings located just behind the burros. Dr. Hudgens took this photo along Tonopah's Main Street, circa 1903. *(Author's collection)*

filed an Additional and Amended Certificate of Location of the Silver State claim, also surveyed by Booker.[44] The Silver State had on its western border the famous Mizpah and on its southern border the Occidental.[45] Later, the Silver State had on its eastern border the Del Monte claim and on its northern border the Thanksgiving and Belmont claims.[46]

The progress of the tunnel was attracting much attention from mining men from all parts of the United States. The *Tonopah Bonanza* wrote a series of lengthy articles extolling the high promise of the tunnel property.[47] Several experts came to inspect the works and all predicted the discovery of rich ore bodies. The owners agreed, and on November 13, 1901, they incorporated the property under the laws of Nevada.[48] The new corporation located its main office in Tonopah and called itself the Tonopah Tunnel and Mining Company. This new corporation included the old H.& G. Tunnel and the Silver State and Occidental claims.It had capital stock of 1,000,000 shares with a par value of $1 per share. The capital stock subscribed was 600,000 shares distributed as follows: Robert Gordon, Alonzo L. Hudgens, Calvin Brougher, Tasker L. Oddie and Patrick Manning, all of Tonopah, each owning 120,000 shares. Henry C. Cutting, a Tonopah mining man of considerable repute, was the notary public when

the owners filed the papers with J. A. Ohlander, Nye County Clerk.[49] The *Tonopah Bonanza* reports, "The following Directors have been elected in the Tonopah Tunnel & Mining Company: A. L. Hudgens, R. C. Gordon, P. Manning, Cal Brougher and T. L. Oddie. The officers elected at the last meeting of the Board are the following: T. L.Oddie, President; R C. Gordon, Vice-President; Cal Brougher, Treasurer; A. L. Hudgens, Secretary."[50] The owners decided not to place the stock on the market until they had explored the property to a greater extent.[51]

Jay Carpenter's "The History of Fifty Years of Mining at Tonopah, 1900-50," talks about important Tonopah mining men. In it he writes that Cal and Wils Brougher, with Tasker Oddie, organized the Tonopah Tunnel and Mining Company.[52] In light of the information detailed above, Carpenter's statement is only partially true. He leaves out Hudgens and Gordon, who were the sole locators of the H. & G. Tunnel and the Occidental claim, as well as co-locators of the Silver State claim. Hudgens and Gordon were also equal shareholders of the new company and very active in developing the property. Robert Gordon, Dr. Hudgens, and his wife, Anne Lee Hudgens, had tunneled into the mountain almost 160 feet before Brougher and Oddie bought into the tunnel property. Carpenter also leaves out Pat Manning, an equal shareholder and also extremely active in the digging of the tunnel. In *Tonopah Past, Present, and Future,* published in 1902, James W. Travers mentions the tunnel property. He writes that the Brougher brothers owned one fifth of the tunnel site location,[53] later noting that Hudgens was one of the original locators of the H. & G. Tunnel property. Then he states that the doctor and R. C. Gordon sold their interest in the tunnel property to Arthur Brock.[54] Travers does not mention Pat Manning at all, and he does not mention the tunnel property when writing about Tasker Oddie.[55] The tunnel company now employed six men in three eight-hour shifts.[56] By November 16, 1901, the tunnel was 310 feet deep, with 90 feet of length added by November 26. The three shifts of miners were advancing the tunnel four feet per day. In February 1902, the tunnel was in 450 feet, and by March it had reached a depth of 650 feet.[57] The company made plans to sink a shaft on the Silver State, only 400 feet from the extreme eastern workings on the Mizpah.[58] Many leading mining experts recognized the tunnel property to be of great financial value and publicized it as such.[59] This fact caught the attention of many local and national businessmen. As early as December 1901, these men started negotiations with the owners to buy the tunnel property, but they reached no agreement. [60] As the value of the tunnel properly went up, so did the value of surrounding claims; miners hoped that any rich ledge or vein of ore on the property would run into the next claim. Dr. And Mrs. Hudgens realized this trend and filed claims near the tunnel property. Hudgens was a partner with W. J. Sinclair for the Maggie May claim, and sole owner of the Eula claim.[61] He was also a partner with W. J. "Billy" Douglass, S. K. Bradford, and J. G. Booker for the Last Thought claim.[62] Realizing their value, "Uri B.

Dr. and Mrs. Hudgens ran a dentistry business in Tonopah. Dr. Elton W. Davis took this photo in front of the Hudgens' office. Davis purchased this business from Hudgens in 1902. The front door of Tonopah's Best Western Hotel is now located here. Left: Tom McCabe, miner and friend of the Hudgens'. Next: Dr. Hudgens, with his wife Ann standing behind him. Right: Miss Maude Alley, sister of Mrs. Hudgens. Photo circa 1902. *(Author's collection)*

Curtis and C. B. Zabriskie offered to purchase two valuable claims new the H. & G. tunnel property claims, but Dr. Hudgens and wife refused a snug sum down on the two pieces of property."[63]

Anne Hudgens was a miner in her own right, having been the locator and full owner of the Rescue mining claim.[64] The shaft on this claim became the main shaft of the Rescue-Eula Mining Company, the eleventh most productive in Tonopah history.[65] Mrs. Hudgens had other mining experience in Tonopah as well. She came to Tonopah in May 1901 to work at her husband's side. She put on her overalls, plaid shirt and boots and hiked up to the tunnel property with her husband. While the men dug and loaded the ore, Anne Hudgens pushed the ore cars out to the tunnel entrance and dumped the ore. She had wanted to come to the camp earlier, but was unable to do so because she was attending dental school at the University of California at Berkeley. She was a senior and wanted to graduate. She did finish her studies, but being in a rush to get to Tonopah, she skipped her commencement ceremonies. She hurried to Tonopah and there assisted her husband in their thriving dentistry practice and many mining interests.[66]

Uri B. Curtis was the owner of several mining companies to the east of the tunnel property, the development of which a later article will cover. Tasker Oddie also invested in many properties surrounding the tunnel property.[67]

Meanwhile, negotiations with prospective buyers of the tunnel property continued. The March 15, 1902, *Tonopah Bonanza* reports, "Even though present negotiations fail other parties are awaiting an opportunity *to* take hold of it; hence a transfer of the ground is a certainty."

Tasker Oddie writes

"I am expecting to make a nice sum of money out of our tunnel claims in a short time. Mr. McCulloch and Mr. Stokes have sent General Ellsworth Daggett out here to examine it. He is a very fine mining expert, and a fine man in every way. Sieben and I are entertaining him as he is in our house with us. It will take him about three weeks to complete his work as he is examining the main claim here at the same time. He is greatly pleased with what he has seen so far. I am very anxious to have this deal go through, as I will retain a substantial interest in the tunnel after it is sold.[68]"

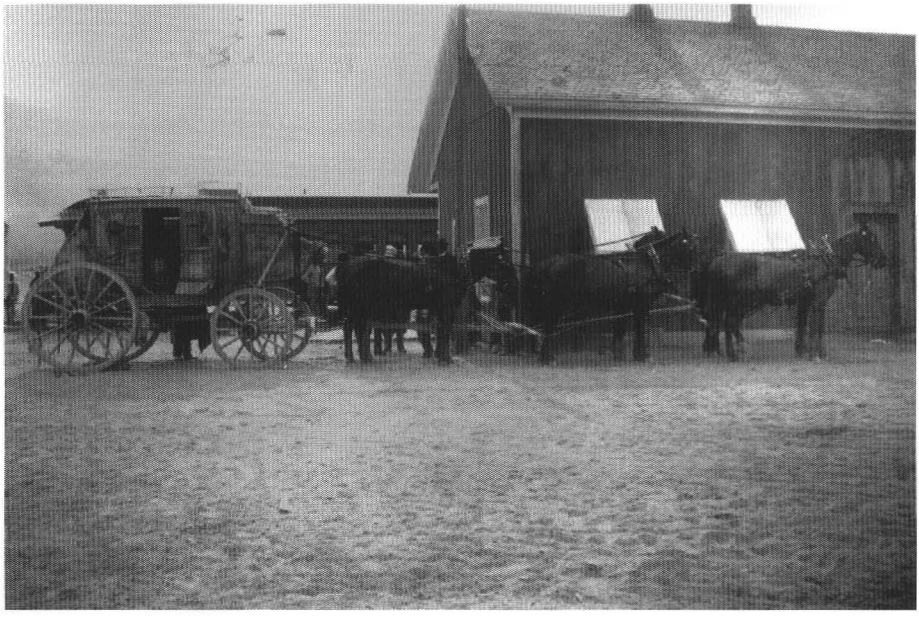
On April 5 the *Tonopah Bonanza* states,

"If the sale now pending should fall through, it is the intention of the owners to commence at once the sinking of a 500 foot shaft on the Silver State claim located in the tunnel. That this is the greatest piece of properly aside from the original discoveries is conceded by every mining man who has visited the camp."

Many in Tonopah speculated as to the price the tunnel property owners would or should sell. If the owners held out for too much money, they would scare away all possible buyers. Yet if they sold out for too little money, they would get scant reward for their years of hard work. Tension grew as serious businessmen made offer after offer. Undaunted, the owners said no, holding out for more. In May, Mr. Drew of Boston and Mr. Pearce of California arrived by stagecoach. They represented Boston financial interests and their journey to Tonopah was for the purpose of buying the tunnel property. After much negotiating, the parties could not agree upon terms, and many feared yet another sale would fail.[69]

Also in May, Arthur Brock had arrived by stagecoach, making his first visit to Tonopah. [70] A wealthy Philadelphia businessman, Brock was president of the Tonopah Mining Company. This company had purchased the Jim Butler claims the previous year for more than $300,000. Brock was visiting to inspect the mines and town. Most likely, he also meant to inspect the tunnel property about which he had heard so much from Tasker Oddie.[71] He saw the development on the tunnel property and believed in the future riches that it held. He also realized that this property would sell soon, so he promptly opened negotiations with the owners. The negotiations were successful for both parties.

This photo, taken from the seat of a stagecoach or freight wagon, shows freight teams loaded with ore heading from Tonopah to Sodaville. The muleskinner is leaning against the wagon. Circa 1902. *(Author's collection)*



This photo beautifully captures an old Concord stage awaiting passengers, from the Carson & Colorado train in the background. Dr. Hudgens took this photo in Sodaville, Nevada circa 1903. *(Author's collection)*

The *Tonopah Bonanza* reports,

"**IMPORTANT MINING DEAL PERFECTED. G. & H. Tunnel Sold to Arthur Brock, President of the Tonopah for $250,000.** The most important sale that has taken place in Tonopah since the sale of the Mizpah group was perfected last week, when the G. & H. Tunnel was sold to Arthur Brock, president of the Tonopah Mining Company. Following are the newly elected officers of the company: T.L. Oddie, President; Arthur Brock, Vice-President; Clyde A. Heller, secretary; H.C. Brougher, treasurer; Fred J.Siebert, consulting engineer; T.L. Oddie, Arthur Brock, Clyde A. Heller, H.C. Brougher and R.H. Sanders, Directors."

Oddie and the Brougher brothers decided to hold all their interest in the tunnel property while Hudgens, Gordon, and Manning sold all their shares to Brock.[72] This news was also reported in the nationally distributed *Mining and Scientific Press*.[73]

The new company owners planned to use the Silver State shaft to develop the eastern extension of the Mizpah, Burro, and Valley View veins. The western edge of the Silver State claim was only sixty feet from the Desert Queen shaft, which was the easternmost development of the Tonopah Mining Company. Brock wasted no time developing his new property. In May 1902, the company began sinking a 600 foot shaft on the Silver State ground. With the help of a gasoline hoist, three shifts of miners worked on the double compartment shaft.[74] Miners would soon discover the eastern extensions of the rich Mizpah, Valley View, and Burro ledges. They would also find the valuable Silver State vein on the property. These discoveries would make the Silver State one of the richest of all of Brock's Tonopah claims, and they helped carry the company financially until the miners struck the even richer Belmont vein in 1911. The Silver State, the Occidental, and the H. & G. Tunnel paid large dividends to the stockholders of the Belmont for many years. They were important parts of the Tonopah Belmont Development Company's beginning and its founding.

After the big sale, the five Tonopah Tunnel and Mining Company directors went their own ways. Hudgens used his money from the sale of the tunnel property to invest in at least eight other mining companies, numerous mining claims, and even a grubstake. He eventually had mining interests in the Tonopah, Gold Mountain, Goldfield, Bullfrog, San Antone, Lone Mountain, Liberty, and Pine Grove mining districts.[75] He also invested in the Tonopah Mining, Milling and Development Company that built and operated the first commercial mill in Tonopah. Later this mill came to be known as the Midway Mill.[76] Eventually, Dr. and Mrs. Hudgens earned between half and one million dollars in just a few short years. In 1902 Dr. Hudgens sold his Tonopah dentistry practice, bought the Dunphy mansion in the San Francisco area, and moved there in 1903 with his expectant wife.[77] Anne Hudgens delivered a healthy baby boy on September 26, 1903, and named him Luverne (later changed to Vern) Lee Hudgens. Meanwhile, Hudgens sold his mining companies, joined

the San Francisco Stock and Exchange Board and became a stock broker.[78] Unfortunately, the Hudgens family lost most of their money in the San Francisco fire and earthquake of 1906 and the financial panic of 1907. Hudgens tried to recoup their losses by again prospecting in Nevada. Finding nothing of value, he and his family decided to live with their old friends back in Tonopah, arriving, after a brief stay in Millers, in October 1909. Hudgens soon heard of rich Mexican ore discoveries and traveled to the Chihuahua province looking for rewarding mining prospects. He became afflicted with yellow jaundice but managed to travel back to Tonopah. While convalescing at home, Hudgens rose from his bed and collapsed onto his bedroom floor while his six-year-old son stood watching helplessly. [80] He died on December 20, 1909, while he and his family lived in the old Al Stock house on University Street in Tonopah. On December 23, Hudgens would have been forty-four years old and married for thirteen years.[81] Anne and her son lived in Tonopah until 1918, when they moved to California.[82] She died there in 1957, and is buried in Tonopah, next to her husband, in the Masonic section of the new cemetery.[83]

Robert C. Gordon decided to get out of mining altogether and returned with his newly found fortune to Atlantic City, New Jersey. There he married his boyhood sweetheart. Later, he lost the fortune. He worked hard to acquire a new one but then died.[84] Tasker Oddie went on to make a large fortune in Nevada mining. He started or bought into more than a dozen mining companies all over Nevada. However, he had borrowed a lot of money to finance his enterprises; and when the financial panic of 1907 came he went bankrupt. He recovered from these losses and later was elected governor and United States senator from Nevada. Many books about Nevada history, including Oddie's biography, document his life very well.[85] Pat Manning seems to have come from and gone back to obscurity after his involvement in the tunnel property. This author found no mention of Manning in newspapers or public records. Cal Brougher, along with his brother Wils Brougher, were involved in many mining interests as well, including the Butler leases. Cal Brougher became a principal shareholder in the Tonopah Belmont Development Company. In 1909 he was instrumental in pushing exploration of the undeveloped eastern portion of the company's property, thus discovering the famous Belmont vein.[86] This vein was to be one of the richest in Tonopah history, second only to the Mizpah vein. Sometime after 1905, Cal Brougher, along with George Wingfield of Goldfield fame and fortune, became heavily involved in the development of the Tonopah Divide Mining Company, located on Gold Mountain, six miles south of Tonopah. This company was still going strong in 1919.[87]

NOTES

[1]Jay A. Carpenter, Russell Richard Elliot, and Byrd Fanita Wall Sawyer, "The History of Fifty Years of Mining at Tonopah, 1900~50," *University of Nevada Bulletin*, 47 (January 1953), 141.

[2]Loren B. Chan, *Sagebrush Statesman: Tasker L. Oddie of Nevada* (Reno: University of Nevada Press, 1973), 28.

[3]Carpenter, Elliott, and Sawter, "History of Fifty Years of Mining at Tonopah," 49.

[4]*Ibid.*, 146.

[5]William A. Douglass and Robert A. Nylen, *Letters from the Nevada Frontier: Correspondence of Tasker L. Oddie, 1898-1902* (Norman and London: University of Oklahoma Press, 1992).

[6]Robert D. McCracken, A *History of Tonopah, Nevada* (Tonopah: Nye County Press, 1990), 76.

[7]Francis Church Lincoln, *Mining Districts and Mineral Resources of Nevada* (Las Vegas, Nevada Publications,1982), 188.

[8]Lincoln, *Mining Districts and Mineral Resource of Nevada*, 188.

[9]Carpenter, "History of Fifty Years of Mining," 49.

[10]JohnMoore, *Tonopah* (May 1903). The magazine *Tonopah* listed John Moore, Jr., as its business manager. It was to be published monthly at twenty-five cents per copy. No publisher is given, but the address was 708 Market Street, San Francisco, and the telephone number was Bush 754. The only issue seen by this author is located in the Central Nevada Museum, Tonopah. It was published in May 1903, as Vol. 1, no. 1. The *Tonopah* measured eleven inches by eighteen inches and contained thirty-two pages of articles and advertisements. This issue has a wealth of written and pictorial information about Tonopah's people and its mining companies. It also has lots of information concerning other central Nevada mining districts.

[11]Moore, *Tonopah*, p. 7.

[12]*Tonpah Bonanza* (22 November 1902).

[13]*Ibid.* (24 lanuary 1903).

[14]*Ibid. (4* April 1903).

[15]*Tonopah Miner* (14 March 1903).

[16]Moore, *Tonopah, p. 7; Tonopah Bonanza (22* November 1902, 24 January 1903); *Tonopah Miner* (14 March 1903); Carpenter,"History of Fifty Years of Mining," 130.

[17]*Mining and Scientific Press* (6 December 1902)(San Francisco).

[18]Carpenter, "History of Fifty Years of Mining," 2.

[19]*Ibid.*, 3; Lucile Rae Berg, "A History of the Tonopah Area and Adjacent Region of Central Nevada, 1827-1941" (M.A. thesis, University of Nevada, Reno, 1942), 68.

[20]Berg, "History of the Tonopah Area," 68.

[21]Emil W. Billeb, *Mining Camp Days* (Berkeley: Howell-North Books, 1968), 4; Berg, "History of the Tonopah Area," 68-69; Samuel Post Davis, ed., *The History of Nevada* (Los Angeles: Elms Publishing Co., 1913), 321.

[22]Russell Richard Elliott, "The Tonopah, Goldfield, and Bullfrog Mining Districts, 1900-1915: History of a Twentieth-Century Mining Boom" (Ph.D. dissertation, University of California, Berkeley, 1946), 21.

[23]Douglass and Nylen, *Letters from the Nevada Frontier*, 254; Moore, *Tonopah*, p. 16. Both these sources clearly state that Hudgens arrived in February l901. However; although this author found no documentation for Gordon's exact time of arrival in Tonopah, an estimated time of arrival, between December 25, 1900, and March 12, 1901, is easy to deduce. He was in Tonopah filing the tunnel claim on March 12, 1901. Yet he had not arrived by Christmas 1900. Douglass and Nylen write, "According to Chauncey W. Smith's article on Tonopah's first Christmas, there were only fourteen men in camp. These included T. L. Oddie, W. A. ("Billy") Marsh, R. B. ("Dick") Davis, W. J. Sinclair, J. C. ("Jack") Humphrey, W. J. ("Billy") Douglass, S. A. Knapp, Shafe Haugher, Andrew Eastin, Elmer Dunlap, Harry Ramsey, Sam Chase, Dan Fitzpatrick, and Gussey of Austin" (p. 245).

[24]Records of the Tonopah Mining District, Nye County, Nevada, Book B, p. 69. This book is located at the Central Nevada Museum, Tonopah.

[25]Records of the Tonopah Mining District, Book B, p. 69.

[26]Booker and Bradford, Tonopah mining claim map, 1902.A large wall copy of this map is

located in the Butler display cabinet, Central Nevada Museum, Tonopah.

[27]Keith G. Papke, *Mining Claim Procedures for Nevada Prospectors and Miners, Special Publication 6*, Nevada Bureau of Mines and Geology (Reno: A. Carlisle and Company, 1982), 89, 22-23;*Tonopah Bonanza* (22 November 1902).

[28]*Tonopah Bonanza* (22 June 1901).

[29]Records of the Tonopah Mining District, Book B, p. 109-10.

[30]*Ibid.*, p. 109.

[31]*Ibid.*, 109-10; Booker and Bradford Tonopah mining claim map, 1902.

[32]Bradford and Bradford Tonopah claim map, 1905. A copy of this map may be found at the Central Nevada Museum, Tonopah.

[33]*Tonopah Bonanza* (17 August 1901).

[34]Douglass and Nylen, *Letters from the Nevada Frontier*, 286.

[35]Nye County Assessor's Office, Book O of Deeds, pp. 182-83.

[36]*Ibid.*, pp.253-54.

[37]*Ibid.*, p. 255. In December 1901, Manning is listed as an equal partner in the Tonopah Tunnel and Mining Company's Articles of Incorporation.

[38]The *Tonopah Bonanza* reported him working in the tunnel in August 1901.

[39]*Tonopah Bonanza* (17 August 1901).

[40]*Ibid.*, (17 August 1901).

[41]*Ibid.*, (14 September 1901).

[42]Records of the Tonopah Mining District, Book B, p. 134. On pp. 135-36 is the Certificate of Survey of the Silver State.

[43]Records of the Tonopah Mining District, Book B, p. 136.

[44]*Ibid.*, pp. 167-69.

[45]*Ibid.*, p. 135; Booker and Bradford Tonopah mining claim map, 1902.

[46]Bradford and Bradford, Tonopah claim map, 1905.

[47]*Tonopah Bonanza* (16 November 1901, 23 November 1901, 15 March 1902, 5 April 1902, 31 May 1902).

[48]*Ibid.* (16 November 1901).

[49]Tonopah Tunnel and Mining Company's Articles of Incorporation, recorded in Vol. 3, p.77377, 12-5-1901, by A. W. Morris, Deputy Secretary of State, Nevada. These are on file at the Nevada State Archives, Carson City; Douglass and Nylen, *Letters from the Nevada Frontier, 896-* 286; C. D. Van Duzer, editor/publisher, *Nevada Miner* (1 July 1902), Golconda, Nevada, p. 44.

[50]*Tonopah Bonanza* (1 March 1902); *Mining and Scientific Press* (5 April 1902).

[51]*Tonopah Bonanza* (23 November 1901).

[52]Carpenter, "History of Fifty Years of Mining," 130.

[53]James W. Travers, *Tonopah Past, Presen and Future* (October 1902), San Francisco, p. 26.

[54]Lbid., p. 40.

[55]*Ibid.*, p. 12.

[56]*Tonopah Bonanza* (16 November 1901, 23 November 1901).

[57]*Ibid.* (16 November 1901, 23 November 1901, 8 February 1902, 15 March 1902).

[58]*Ibid.* (15 March 1902).

[59]*Ibid.*(23 November 1901, 15 March 1902, 5 April 1902).

[60]Douglass and Nylen, *Letters from the Nevada Frontier*, 320.

[61]Records of the Tonopah Mining District,Book B, pp. 111, 193-95, 338-39. W. J. Sinclair sold all his interest in the Maggie May claim to A. L. Hudgens for $200 on January 12, 1904. Nye County Assessor's Office, Book R of Deeds, p. 306.

[62]On April 15, 1903, A. L. Hudgens *et al.* (A. L. Hudgens, W. J. Douglass, S. K. Bradford, and J. G. Booker) sold to Walter J. Harris *et al.* the Last Thought vein for $16,000. Nye County Assessor's Office, Book of Deeds R, p. 467. W. J. Harris later sold the Last Thought to the Eula Consolidated Mining Company. Nye County Assessor's Office, Book of Deeds R, p. 471. This company later joined with the Rescue Mining Company to form the Rescue-Eula Mining Company. The Maggie May claim was also made part of the Rescue-Eula Mining Company.

[63]*Tonopah Bonanza* (14 December 1901).

[64]Records of the Tonopah Mining District, Book B, p. 124.

[65]Carpenter, "History of Fifty Years of Mining," 149.

[66]Anne Hudgens, personal interviews by Ruth Dallam (Hudgens) Fairall, granddaughter of Alonzo and Anne Hudgen, David Fairall private collection of documents and photographs, University of California Archives, Bancroft Library, University of California, Berkeley; Douglass and Nylen, *Letters from the Nevada Frontier*, 257, 370; Moore, *Tonopah, p.* 16.

[67]Oddie's financial involvements are discussed somewhat in Chan, *Sagebrush Statesman*, and in Douglass and Nylen, *Letters from the Nevada Frontier.* However, investigating Oddie's entire financial involvement in mining companies would be an exhaustive research project in itself.

[68]Douglass and Nylen, *Letters from the Nevada Frontier*, 320.

[69]*Tonopah Bonanza* (24 May 1902).

[70]*Ibid.* (17 May 1902).

[71]Chan, *Sagebrush Statesman*, 28.

[72]*Tonopah Bonanza* (31 May 1902).

[73]*Mining and Scientific Press* (7 June 1902).

[74]*Tonopah Bonanza* (31 May 1902).

[75]Documentation on these companies is in the David Fairall collection.

[76]Carpenter, "History of Fifty Years of Mining," 52; Moore, *Tonopah,* p. 24; *Tonopah,Bonanza* (9 May 1903, 16 May 1903); *Tonopah Miner* (23 May 1903).

[77]Moore, *Tonopah,* p. 16.

[78]JosephL.King, *History of the San Francisco Stock Exchange Board*, copy of early 1900s edition (New York: Arno Press, 1975), 48; *Tonopah Miner* (8 July 1905).

[79](Luverne) Vern Hudgens, son of Alonzo and Anne Hudgens, personal interviews by the author during the 1970s and 1980s;*The Tonopah Sun* (21 December 1909).

[80]Vern Hudgens, personal interviews.

[81] *The Tonopah* Sun (21 December *1909); Tonopah* Bonanza (21 December 1909); *Pioche Weekly Record* (31 December 1896;*Carson City News* (4 January 1896); Lincoln County Records, Book "B" of Marriages, p. 129.

[82]Vern Hudgens, personal interviews.

[83]*Tonopah Times-Bonanza and Goldfield News* (7 June 1957); Certificate of Death, #57-051693, State of California; New Tonopah Cemetery Records, p. *26.*

[84]This information comes from a photocopied newspaper article from 1935. The newspaper's name and exact date of publication are unknown.

[85]This information on Tasker Oddie is scattered throughout several chapters in Chan, *Sagebrush Statesman*. Those who wish to know more about Mr. Oddie should read this biography by Chan.

[86]*Nevada Newsletter* (Reno, Nevada), 20 (21 June 1919), pp. 11-12.

[87]*Ibid.*, p. 13.

EARLY AUTOMOBILES IN NEVADA
Registrations and License Plates, 1913-1937

Jack Middleton

In 1913 Nevada began the registration, licensing and taxation of its motor cars.[1] Although the 1907 legislature had in 1907 attempted to regulate the running of automobiles, the bill was "laid on the table" in the Senate. The 1913 legislation set registration fees at 12.5 cents per horsepower with a minimum of 20 horsepower. The fee for a 20-horsepower Model T Ford was $2.50; a 60-horse Thomas Flyer fee was $ 7.50—the average being $3.75 for 30-horsepower Overlands and REO's. License fees were prorated by the quarter and collected by the Secretary of State.

License number 1 was issued on April 23, 1913, to E. J. Arnold, of Goldfield, for a Willys-Overland touring car, motor power 30, for a fee of $2.85. This registration would expire on December 31, 1913, at which time a new license disc with a new number would be issued. License number 2 was issued to J. E. Durham, Reno, for a REO five passenger touring.

The first license for a Ford automobile was number 42, issued April 16, 1913, to A. M. Beebe, Reno, for a five-passenger touring car, engine number 16931. The license fee was $1.87 for his 1910 Model T. The first woman to register a vehicle was Lulu E. Mooser of Reno, who registered her Cadillac touring car on September 5, 1913. A total of thirty-one women would register vehicles before the end of the year, boldly declaring their gender.

The first Ford taxi, an early 1913 five-passenger touring car, was registered April 18, 1913, license 63, motor number 157660. Western Auto Supply of Reno was the registrant.

Nevada's grand total for 1913 was 1,093 licenses. Of this number, 57 were commercial vehicles (trucks, buses, delivery cars, taxi cabs).

There were 103 different manufacturers listed in Nevada's records (See Appendix A). Twenty marques accounted for 76.5 percent of the total registered. Ford led with 212 registrations followed by Studebaker-EMF (101), Buick (92),

Jack S. Middleton, who has a master's degree in Psychology from Purdue University, retired from state service in 1995 after thirty years in mental retardation and mental health. A collector of antique cars, he became interested in early registrations while researching an old car he found in Fallon. He is on the board of the Model T Club of America and a member of the Automobile License Plate Collectors Association.

Willys-Overland (61), Cadillac (57), REO (52), Hupmobile (44), and Dorris (39).

In 1915 Nevada increased the fees: automobiles of 20 horsepower or less were charged $3.00, between 21 and 40 horsepower $5.50, and over 40 horsepower, $8.00. A $3.00 fee was added for motorcycles.[2]

Those Early Car Salesmen

By 1918 there were sixty-three licensed dealers in the state, each paying the $10 fee to sell cars (see Appendix B). Thirteen carried the Ford Model T line. Some of these dealers are still in business today: Clarence O. Dangberg's COD Garage in Minden opened in 1911. The fact that there was a local dealer would certainly affect the number of cars of that marque sold. However, there were also in 1913 twenty-one Thomases registered and twenty-five PopeHartfords. The presence of these large, high-powered, expensive machines without a local dealer is difficult to explain.

Keeping the Record Straight

From 1913 to 1925, registrations statewide were filed with the Office of the Secretary of State's. Between 1916 and 1925 registrations were also published in the *Appendix to Journals of Senate and Assembly* under a section titled, "Registered Automobiles and Motorcycles." The Secretary of State's records are in seven bound volumes and can be viewed at the Nevada State Library and Archives in Carson City.[3] The records list the owner and place of registration, maker, style and factory number of the vehicle, as well as dates of registration, expiration, and fee.

Although records of motor vehicle registrations were kept during 1925-57, they are not available for review. The responsibility for licensing and registration of motor vehicles passed to the Public Service Commission, along with all records and equipment, on approval of the legislature on March 24, 1949.[4] From 1957 to present, the Division of Motor Vehicles and Public Safety has been responsible for registering and licensing vehicles.

The License Plates

During 1913-15, the Secretary of State issued a round aluminum disc as a license plate. The 1913 disc is thought to have been manufactured by S. G. Adams S&S Company, Saint Louis. The 1914 disc is thought to have been made by The Greenduck Company, Mastercrafters in Metal, Chicago. The disc was to be "conspicuously displayed on the motor vehicle to which the number has been assigned."[5] In addition, the owner was required to display the tag's number on the back of the vehicle in such manner as to be plainly visible. Collectors value these discs highly, and with only 4,885 issued, they are very rare. With sales as follows: for 1913, 1,093; for 1914, 1,683; and for 1915, 2,109. Although the law required the owners to turn in the disks each year, it is probable

that most went to the scrap heap nailed to the firewall. In 1916, Nevada issued its first modern, rectangular license plate.[6] It was embossed and had yellow numerals on a forest-green background. These plates were made by an out-of-state concern.[7] The law creating dealers' plates for use until the vehicle was sold took effect on January 1, 1916. Some of the 1918 plates were printed on the backs of unissued 1917 plates that had been made for other states; Rhode Island and Massachusetts have been noted by collectors.[8]

In 1928 the legislature appropriated funds for the manufacture of plates at the Nevada State Prison where inmates provided the labor. The cost to the state for a steel two-plate set in 1928 was .07 cents.[9] Plates are still being made with prison labor.

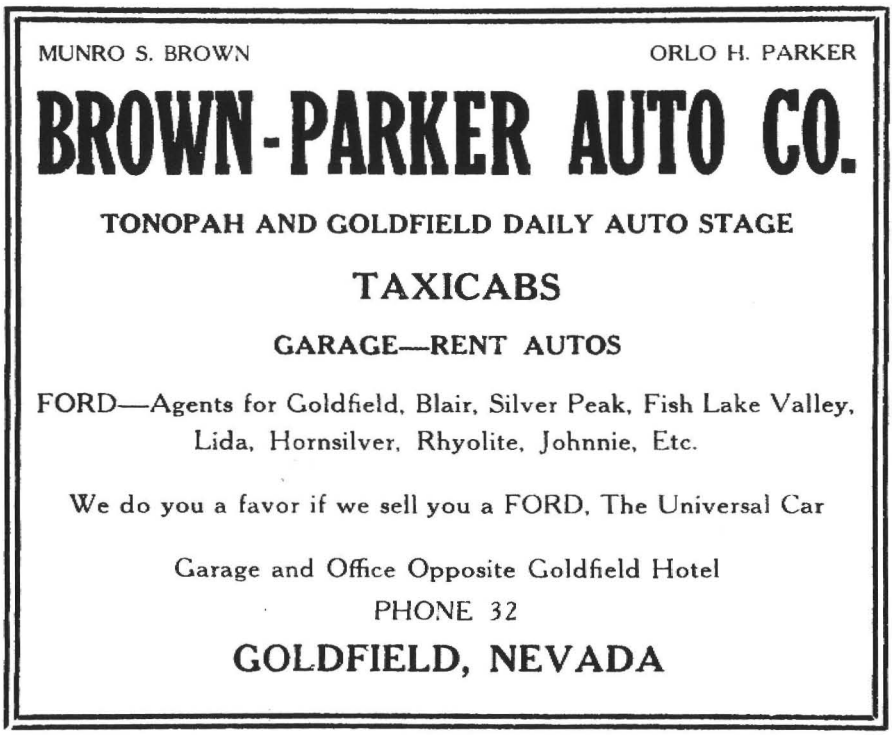
From 1916 to 1935, the Secretary of State picked the plate colors at random. They were to be "arabic numerals, light on dark background, each numeral not less three inches in height."[10] (See Appendix C). In 1936, the practice of alternating silver and blue began. This color scheme continues with a few exceptions.

Enforcement and Regulation

The 1913 Law of Nevada required that all vehicles must have adequate brakes, a horn and front and rear lights. Effective January 1, 1916, the county sheriffs were given responsibility for enforcement of vehicle operation and registrations. The law stated, "if he (sheriff) knowingly neglects or refuses to do so, for each offense, he (sheriff) shall be subject to a fine of twenty dollars."[11]

Drunk driving was first addressed in the Laws of Nevada 1917, section 9: "nor [shall an] intoxicated person be permitted to drive the same. No person under sixteen years of age shall be permitted to drive or operate any motor vehicle in any incorporated or unincorporated city or town in this state."[12] The law also provided for "reasonable and proper" speed limits and that no speed limits could be set lower than twelve miles per hour.

Although Nevada was a late comer in the taxing and regulation of the automobile, the early years of vehicle licensing, taxing and enforcement set the stage for present day laws. Hardly a legislative session since 1913 has gone by without amendments and additions to the state's licensing and regulatory requirements.



Auto Stage Ad – Tonopah

APPENDIX A
Automobiles Licensed in Nevada, by Marque, 1913

Marque	Number	Total (in percentage)
Abbott Detroit	2	
American Locomotive C	3	
American Motors-Rambler	7	
Amplex	1	
Anderson Carriage (Electric)	1	
Anhut Motor Car	1	
Apperson	13	
Atterbury Motor Car Co	1	
Auto Car	2	
Brush	7	
Buick	92	8.4
Cadillac	57	5.2
California Tourist	1	
Cameron Car Co	2	
Cartercar	5	
Case, J. Threshing Machine Co.	23	2.1
Chalmers-CMC-	29	2.7
Chalmers Detroit		
Chase Motor Truck	2	
Chicago	1	
Cole	5	
Columbia	1	
Corbin Motor Car Co	1	
Crow-Elkhart	2	
Dart	2	
Dorris	39	3.6
Elmore	2	
Ford	212	19.3
Enger Motor Car Co	1	
Euger (Cinn. Ohio)	1	
Federal	6	
Flanders	2	

APPENDIX A *continued*

Franklin	5	
Garford	1	
Garof	1	
General Motors	1	
Great Western Auto Co.	3	
Haynes	6	
Howard		
Hudson	8	
Hupmobile	44	4.0
Ideal Motor Co (Stutz)		
Imperial	5	
International Harvester	4	
Jackson	4	
Jeffery, Thomas	2	
Knox	2	
Krit	1	
Lion Motor Co.	2	
Little Motor Car Co	1	
Locomobile	5	
Lozier	1	
Mack Motor Truck	2	
Marrion Motor Car Co	5	
Maxwell-Briscoe	14	1.2
Mc Intyre, W H	1	
Mercer	1	
Metz	10	
Michigan Auto Works	11	1
Midland	1	
Mitchell	19	1.7
Moline	1	
Motor Car Mfg Co	1	
National	4	
Oakland	9	
Olds - Oldsmobile	14	1.2
Owen, R M	2	
Packard	6	

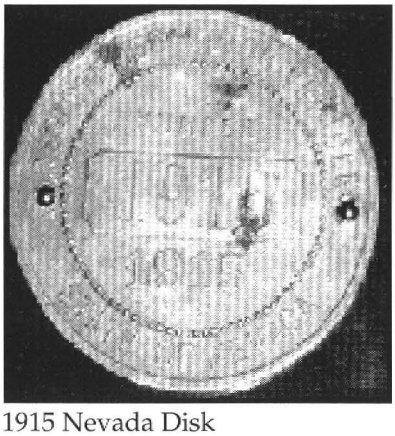
APPENDIX A *continued*

Paige-Detroit	5	
Pannoid	1	
Parry Arrow	2	
Peerless	5	
Pierce, George-	15	1.4
Pierce Arrow		
Pilot	7	
Pope-Hartford	25	2.3
Premier	2	
Pullman Auto Co.	8	
RCH Corporation	2	
REO	52	4.8
Regal	3	
Saint Louis	1	
Schach Motor Co	2	
Sears	1	
Simplex	4	
Smith & Mabley Motor C	1	
Staver Carriage Co	1	
Stearns, F B	4	
Stevens-Duryea	3	
Stewart	2	
Stoddard-Dayton	7	
Studebaker Bros - EMF	101	9.2
Thomas, E R	19	1.7
Thomas Flyer	2	
Troy Carriage	1	
Turist Auto Co	1	
United Motor Co	1	
Velie	3	
Warren Motor Car Co	1	
Westcott Motor Car	1	
White Co.	2	
Wilcox Truck	1	
Willys Overland	61	5.6
Winton	12	1.1

APPENDIX A *continued*

York Motor Co	1	
Unknown	2	
Totals:	1,093	
Number of Marques	103	
Commerical (Trucks,Taxis, Delivery)	57	5.2
# Women Registering Cars	31	2.9

Compiled by Jack Middleton, Office of Record, Secretary of State, *Motor Vehicle Register Volume 1*, Nevada State Library and Archives, 100 Stewart St., Carson City, Nevada.



1915 Nevada Disk

APPENDIX B
Registered Nevada Car Dealers, by Marque, 1916-18

Name	Location	Marque(s) Sold
Battle Mountain Garage	Battle Mountain	Ford
F E Meder	Carson City	Overland-Fords
J F Ollinger	Deeth	Overlands
H H Duke	Elko	Oldsmobile-Buick
Elko Lumber Company	Elko	Chevrolets
Hesson Co	Elko	Studebaker
Simcon & Lani	Elko	Ford-Franklin
E S Van Leer	Elko	Dodge
W R Howells	Ely	Chevrolet-Oakland
Ely Motor Car Company	Ely	Maxwell Studebaker
Lincoln Highway Garage	Ely	Reo-Ford-Franklins
Eureka Garage & Supply	Eureka	Dodge-Oldsmobile
C L Benadum	Fallon	Ford
Fallon Garage	Fallon	Oldsmobile- Chevrolet
Fallon Machine Shops	Fallon	Hollier
I H Kent Company	Fallon	Oakland-Maxwells
J L Smith, DDS	Fallon	Overland-Willys
Brunkyle Garage	Gardnerville	Overland
A W H Helbery	Gardnerville	Dodges-Chandlers
Brown-Parker Auto Co	Goldfield	Buicks, Fords
C B Burkham	Hawthorne	Dodge
Conklin Bros	Las Vegas	Fords
Nevada Garage Company	Las Vegas	Overlands
J W Woodard	Las Vegas	Dodge
H E Loufek	Lovelock	Pilot 6
Lovelock Mercantile	Lovelock	Studebaker
Overland Garage	Lovelock	Buick, Oakland, Ford, Dort
F A Preston	Lovelock	Overlands
W H Whybark	Lovelock	Reo's
Joe Cook	Manhattan	Chevrolets
H J Long	Mason	Overland
C O D Garage	Minden	Buicks-Fords
Calavada Auto Co., Inc	Reno	Fords
Corecco Bros	Reno	Chalmers

APPENDIX B *continued*

Dorris Garage	Reno	Cole 8
L L Gilcrease Company	Reno	Hudson-Maxwell
Wm J Greer	Reno	International H
Liberty Auto Co	Reno	Liberty
Mack Auto Co., Inc	Reno	Overlands
Mc Intosh Motor	Reno	Oldsmobiles Sales Co
Menardi Judd Co	Reno	Buick, Oaklands
Motor Sales Company	Reno	Chevrolet & Velie
Osen Motor Sales Co	Reno	Dodge
Pilot Auto Co	Reno	Pilot 6
Revada Sales Company	Reno	Reo & Duplex
Eugene Schuler Co.	Reno	Pilot
Steinheimer Bros	Reno	Studebakers
J B Wainwright Trucks	Reno	Vim-Federals
Wiley Brothers	Reno	Haynes
W E Wisby Company	Reno	Dort
Stanley L Wines	Ruby Valley	Second Hand Cars
Searchlight Merc Co.	Searchlight	Buick
Stewart & Sellstrom	Tonopah	Hudson-Chevrolet, GMC trucks
Midland Garage & M Co	Tonopah	Overlands
Tonopah Auto Supply Co	Tonopah	Ford & Dodges
Geo T Toombs, Jr	Wells	Ford-Samson
Wells Garage	Wells	Buick
C E Haviland	Winnemucca	Reo, Buicks, Fords
E A Smith	Winnemucca	Studebaker-Olds
E P Stites	Winnemucca	Dodge & 2nd hand
Central Garage	Yerington	King, Dort-Mitchell
Jas F Nugent	Yerington	Fords
U & I Garage	Yerington	Reos

Source: Office of Record, Secretary of State, *Motor Vehicle Register Volume 1,* Nevada State Library and Archives, 100 Stewart St., Carson City, Nevada Compiled by Jack Middleton.

Note: A law creating dealers plates that could be used until the motor vehicle was sold took effect 1/1/1916.

APPENDIX C
Nevada Passenger Cars License Plate Colors, 1913-37

Year	Plate Color	Numeral Color	Background Color
1913	2 1/2" Aluminum	na	na
1914	Disc		
1915			
1916	embossed steel	yellow	forest green
1917	flat steel	silver	medium blue
1918	flat steel	black	yellow
1919	flat steel	crimson red	white
1920	flat steel	yellow	crimson red
1921	flat steel	medium green	white
1922	flat steel	black	gray
1923	debossed steel	yellow gold	black
1924	debossed steel	white	dark mint green
1925	debossed steel	white	deep purple
1926	debossed steel	yellow	black
1927	debossed steel	yellow	kelly green
1928	embossed steel	white	bright red
1929	embossed steel	black	orange
1930	embossed steel	orange	black
1931	embossed steel	black	orange
1932	embossed steel	orange	black
1933	embossed steel	white	forest green
1934	embossed steel	forest green	white
1935	embossed steel	white	forest green
1936	embossed steel	silver	cobalt blue
1937	embossed steel	medium blue	silver

Note: Embossed means the numerals and letters are raised.
Debossed means letters and numerals are lowered.

NOTES

[1]*Statutes of the State of Nevada Passed at the Twenty-sixth Session of the Legislature 1913*, Chapter 206, 280, Approved March 24, 1913, Carson City, Nevada, State Printing Office.

[2]*Statues of the State of Nevada Passed at the Twenty-seventh Session of the Legislature 1915*, Chapter 230, Sec. 2, 348, Carson City, Nevada, State Printing Office.

[3]*Motor Vehicle Register Volumes 1-7*, Nevada State Library and Archives.

[4]*Nevada Compiled Laws Supplement 1943-1949*, Public Service Commission to Administer Highway Acts, Sec. 4435.46, 354, Carson City, Nevada, State Printing Office.

[5]*Statutes of the State of Nevada Passed at the Twenty-sixth Session of the Legislature 1913*, Chapter 206, 281, Approved March 24, 1913, Carson City, Nevada, State Printing Office.

[6]*Statues of the State of Nevada Passed at the Twenty-seventh Session of the Legislature 1915*, Chapter 230, Sec. 2, 352, Carson City, Nevada, State Printing Office.

[7]"The Story of Your Nevada Plate", Department of Motor Vehicles, Registration Division, Howard Hill, Director. On file at the Nevada State Library and Archives, vertical file, not dated.

[8]*Automobile License Plate Collectors Association Newsletter*, April 1974, 38-40, 46-48, 838.

[9]"The Story of Your Nevada Plate", Department of Motor Vehicles, Registration Division, . Nevada State Library and Archives, vertical file.

[10]*Statues of the State of Nevada Passed at the Twenty-seventh Session of the Legislature 1915*, Chapter 230, Sec. 2, 349, Carson City, Nevada, State Printing Office.

[11]*Ibid.*, Chap 230, Sec 23, 351.

[12]*Statutes of the State of Nevada Passed at the Twenty-eighth Session of the Legislature 1917*, Chapter 181, Sec. 9, 342, Carson City, Nevada, State Printing Office.

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Compiled by MARTA GONZALEZ-COLLINS

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Numbers printed in boldface refer to photographs and illustrations

BOOK REVIEWS

Overland: The California Emigrant Trail of 1841-1870. By Greg MacGregor. Introduction by Walter Truett Anderson.(Albuquerque: University of New Mexico Press, 1996. xvi + 167 pp., illustrations, maps, notes.)

In this volume photographer Greg MacGregor retraces the route of the Overland Trail as it winds westward from Independence, Missouri toward Sacramento, California. Eighty-three beautifully reproduced black-and-white photographs record the trail's modern appearance. They begin with the power plant that now occupies the site of Independence Landing, on the Missouri River, and end with an elementary school race in the shadow of Sutter's Fort. Along the way they depict sites both familiar—South Pass and the Forty- Mile Desert—and less expected—Hastings Cutoff in Magma, Utah, and the Rock Creek campground where a Mormon handcart company froze to death in 1856. Throughout, as the photographer states, he was guided by a methodology that "required me to follow the track and make photographs, no matter how visually boring the landscape might be" (4). It is to his great credit that these photographs are anything but boring.

Indeed, some of them are downright witty. Plate 28, for instance, manages to make visible the powerful wind that overland emigrants complained about so constantly, by featuring modern visitors whose clothing is being viciously whipped by the same Wyoming gales. And Plate 32, which is accompanied by an 1852 diary entry expressing fear of death along the trail, translates the menace into modern terms by depicting a dust storm blowing off tailings from a uranium mine. Others are poignant. David Eagle, whose features suggest that he is of Native American descent, is depicted without comment in Plate 42, near the simple plastic marker where the California and Oregon trails split. Plate 64 shows an unmarked grave near Wadsworth, Nevada.

All of the photographs are accompanied by explanatory captions and extensive quotations from nineteenth-century guidebooks and travellers on the trail. A graceful introduction by Walter Truett Anderson puts the trail in both familial and historical context, and attempts to temper its romance without denying the splendor of the undertaking. As Anderson explains, the rugged pioneers of movie and myth may well have been brave and sturdy, but they were also imprudent: "You really can't appreciate the full grandeur and tragedy and dif-

ficulty of the emigration overland to California if you don't also appreciate the monumental foolhardiness of it" (xii). MacGregor's photographs repeat the theme, debunking the legend of the Maiden's Grave near Beowawe, Nevada, for instance. By placing overland emigration so firmly in the physical landscape that was its context and its content, his photographs offer fascinating historical insights.

It is a shame, given the many strengths of this photographic tour, that it was so poorly served in the editorial process. The entire work suffers from a lack of documentation, and a sloppy and inconsistent style of citation that make it far less valuable than it might otherwise have been to historians. One example will have to suffice. MacGregor claims with great precision that recent research reveals only 127 trail deaths attributable to Indians between 1840 and 1860, but he fails to provide any source for this information (11-12). Sometimes quotations from historical sources are attributed in the text, sometimes they are not. Largely drawn from secondary sources, they are sometimes cited as quotations, and sometimes not. Some are dated, others are not. Some photographs have explanations of the modern sites, others do not. Some maps have topographical detail, others do not. The same name is spelled two different ways on the same page. It is as if the University of New Mexico Press abdicated responsibility for copy editing altogether. This is a genuine injustice to a work which deserved better.

C. Elizabeth Raymond
University of Nevada, Reno

James J. Hill, Empire Builder of the Northwest. By Michael Malone. (Norman, OK: University of Oklahoma Press, 1996, 306 pp., illustrations, maps, index.)

Few figures have matched James J. Hill's impact upon the Pacific Northwest. Michael Malone's new biography of the "empire builder" captures the spirit of this controversial leader. Hill's began his rise at the age of seventeen, when he left the family farm in Canada for the United States. After a brief tour, he finally settled in 1856 at Saint Paul, the head of steamboat navigation on the Mississippi and the transshipment point for wagon traffic headed north to the Canadian frontier and west to the booming Minnesota and Dakota territories. As a teenager, he initially worked for several employers along the river in the commission and shipping business before starting his own firm, which functioned as a forwarding agent for the Saint Paul and Pacific Railroad. In association with veteran Saint Paul merchant, Norman Kittson, Hill gradually expanded his operations across Minnesota before entering the Red River Valley-

Manitoba trade in the 1870s.

River-based commerce inevitably led Hill into the transportation business just as the Iron Horse began transforming Minnesota. Malone demonstrates how knowledge gained as a shipper benefited Hill's later career. He explains, for example, how Hill's experience as a river merchant in exacting rebates on coal and cordwood fuel from steamboat and railroad companies taught him how to fend off shippers later when he owned his own train lines. Malone covers Hill's early railroad career in the upper Midwest and Canada, using it as a prelude to his subject's masterful construction of the Great Northern. As one might expect, the book emphasizes Hill's clever strategy of constructing the Great Northern slowly, in marked contrast to the Northern Pacific and Union Pacific, whose hastily conceived trunk lines across the Northwest never created enough hinterland traffic to feed themselves. In developing a substantial hinterland north and south of its tracks, the Great Northern boomed numerous towns along the way and engaged in elaborate promotional schemes to attract emigrant farmers to its adjacent lands. Unfortunately, aside from reviewing the underlying factors boosting the cities of Saintt Paul, Seattle and Spokane, Malone devotes relatively little space to other important communities shaped by the Great Northern and its feeder lines across America's northernmost corridor. Given Hill's claim that he "opened up" that part of the country, there should have been more coverage of this process.

Still, Malone paints a compelling portrait of Hill as a visionary and nationalist who lobbied in vain to convince a reluctant Congress to subsidize an American merchant fleet to match what the British government had done for Canada. On a related front, the author correctly observes that while Hill foresaw the importance of Pacific Rim markets to America, he overestimated the extent of the China trade. With Japan, however, he brilliantly exploited Seattle's northern latitude to outflank San Francisco and export American wheat from Saint Paul to Yokohama and other ports. As he did later with Frederick Weyerhaeuser's logging operations in the Northwest, Hill boosted Japan's commerce with the East by drastically cutting his own shipping costs through efficient management.

Hill's economic interests naturally led him into politics. As a former Canadian who recognized the value of free trade, Hill was one of the few Robber Barons who supported the Democratic Party. Indeed, he consistently opposed the Republicans' high tariff policies until William Jennings Bryan, the unions, and "prairie Populists" drove him to McKinley in 1896. But his relief was short-lived. With the onset of the Northern Securities Case, Hill began to recoil at the "progressive" policies of Theodore Roosevelt and other trust-busting Republicans. More important, Malone uses Hill's largely unsuccessful efforts to influence their regulatory practices to question Gabriel Kolko's famous "political capitalism" thesis.

Overall, Malone provides a balanced treatment of his subject, emphasizing

Hill's business acumen as well as his ruthless, autocratic style. Though a notoriously aggressive entrepreneur in the wood, coal and railroad businesses that he knew, Hill also could be surprisingly cautious. Like Andrew Carnegie and other "Industrial Statesmen," he warily entered new fields of enterprise. Indeed, Malone credits luck more than foresight for the millions that Hill made in Minnesota's iron ore business after 1890. On a historiographic note, Malone concludes that given his talent for engaging in fierce competition, his willingness to participate in monopolistic pools, and his philanthropic bent, Hill fit the classic Robber Baron image fashioned by Allan Nevins almost fifty years ago.

This volume, the most recent edition in The Oklahoma Western Biography Series, is in the tradition of Harold Livesay, Joseph Pusateri, and other recent historians who have published informative and readable works in business history. While scholars will find some interesting new material, the book will especially appeal to students of business and western history. They will not be bothered by its lack of footnotes, which is largely offset by a substantial bibliography. Malone has written a first-rate work that more than justifies his view that James J. Hill "was without peer, the preeminent builder of the frontier economy of the Northwest."

Eugene P. Moehring
University of Nevada, Las Vegas

Thomas Jefferson and the Changing West: From Conquest to Conservation. Edited by James P. Ronda. (Albuquerque: University of New Mexico Press [and St. Louis: Missouri Historical Society Press], 1997, xx + 204 pp., maps.)

Thomas Jefferson has never been far from American history's center stage, but the past few years have witnessed an extraordinary resurgence of interest in him. The Jefferson industry has entered mainstream (or at least high-middlebrow) culture with a Ken Burns PBS documentary, a national weekly "Jefferson Hour" on public radio, the feature film *Jefferson in Paris*, and the revival of the musical *1776* on Broadway. Academics across disciplines continue to reinterpret and evoke Jefferson on topics ranging from race to architecture. The essays in James P. Ronda's new collection—four historical analyses, four discussions of present day concerns, and a concluding commentary by Patricia Nelson Limerick—exemplify this diversity. Drawn from papers presented at a 1994 conference at the Missouri Historical Society, this book attempts to elicit numerous scholars' answers to this question: What does Jefferson still offer Ameri-

cans as we think about the West, which looks utterly unlike his vision as we enter the twenty-first century?

Three essays deal directly with Jefferson himself. For geographer John Logan Allen, Jefferson was "a geographer by birth, by training, and by inclination" (4). His interest in lands west of Albemarle County dated back to childhood, when his father and other Virginia gentlemen dreamed and planned explorations and commercial ventures. Influenced by those men's ideas and his own reading, Jefferson's image of the West took a distinct geographical shape: The continent was symmetrical, and thus western lands must be a garden, as river-crossed as the East he knew. His imagined West contained portages and commerce as well as farmers, and his directions to Lewis and Clark reflected this multiple vision as well as the geography he had studied for half a century. Anthropologist Anthony F. C. Wallace similarly finds Jefferson intent on possessing the West, but focuses instead how that intention involved dispossessing Native Americans. Wallace's young Jefferson also listened to his father's friends—but now those friends were talking about *Indian* lands, not unmapped territories. From boyhood Jefferson also heard stories of Indian fighters, and as a young Virginia politician and governor he came to loathe Indian warfare. As a result, argues Wallace, Jefferson's rhetoric of"civilizing" Native Americans never significantly influenced his priorities or methods for acquiring their lands. Historian Peter S. Onuf's elegant essay focuses on another moment, the Missouri Compromise debate of 1820-1821. The debate over extending slavery west aroused the aged ax-president partly because it seemed another Federalist attempt to regain political power, even at the expense of union. More important, the controversy threatened one of Jefferson's cherished ideals: the equality of new western states with the original thirteen, a doctrine encoded in his 1784 land ordinance and the 1787 Northwest Ordinance.

Other contributors consider Jefferson's legacy, not the man himsel£ Historian Elliott West argues that the careers of Saint Louis trader-entrepreneurs William and Charles Bent revealed the limits of Jefferson's West as everlasting garden. While the Bent brothers bridged ethnic and geographical worlds and followed trading patterns and arrangements that dated back centuries, they also promoted new land uses. Worse, their attempts to move Native peoples to the Plains helped create ecological disaster: too many people and animals crowded into unforgiving land just before a long period of drought. Environmental analyst Robert Gottlieb, whose essay never mentions Jefferson, echoes one of West's themes: that multiple "Wests" exist today. Political scientists Helen M. Ingram and Mary G. Wallace connect Jefferson to present-day land policy differently: Challenging the control of land policy by bureaucratic professionals and special interests, they offer an alternative model grounded in Jeffersonian citizen participation and public deliberation. Similarly, Native American scholar Robert A. Williams suggests how Native Americans, whose welfare has never benefitted from Jefferson or his legacy, can use Jefferson: as an "Indigenous

American Storyteller" whose rhetoric of decolonization and basic human rights can be of use to Native Americans and other colonized, indigenous peoples. Finally, Mary Clearman Blew's autobiographical piece about growing up in small-town Montana identifies the problem of mistaking "nostalgia for authenticity," particularly in places we imagine as the "Old West."

As these brief synopses suggest, the essays in this volume engage with Jefferson and his ideas in varying degrees. Some contribute to Jefferson scholarship, powerfully capturing his key paradoxes: the conflicts between national union and states' self-determination as miniature republics, or between the commercial use and the scientific study of the West. Others barely mention him or evoke "Jeffersonian" catch-phrases without analysis. But this diversity helps explain why Jefferson remains so potent as a thinker or a symbol, a voice or a name. To borrow the title of historian Joseph Ellis's recent book, Jefferson is our "American Sphinx": available with a quotation or philosophical fragment to buttress nearly every argument, but also always wrestling with our national dilemmas for those willing to embrace his complexities.

Scott E. Casper
University of Nevada, Reno

Virgil Earp: Frontier Peace Officer. By Don Chaput. (Norman: University of Oklahoma Press, xxii + 225 pp., notes, appendices, bibliography, index, 43 illustrations.)

All too often, those men involved in law enforcement or western outlawery stand in the shadow of others who either attracted a biographer or left behind a collection of manuscripts, court records, sensational newspaper accounts of their exploits or dime novel renditions of their lives. Virgil Earp, older brother of Wyatt Earp, is such a figure.

Wyatt's biographer, Stuart N. Lake, characterized his subject as a man who "tamed the west," relegating his contemporaries, Virgil among them, to minor, supporting roles. Wyatt also had the advantage of outliving those who might have contradicted his recollections and set the historical record straight after *Wyatt Earp Frontier Marshal* was published in 1931. Subsequent motion pictures, television productions and articles by writers less than careful about sources have stamped Wyatt as the principal figure in the events surrounding the fabled "Shootout at the OK Corral," Tombstone, October 26, 1882, the principal event for which the Earp brothers and John "Doc" Holliday are remembered in history. Virgil, on the other hand, had the misfortune of dying in obscurity in Goldfield, Nevada in 1905, mourned and remembered only by his

family and a few friends and leaving scant personal records of his version.

Donald Chaput fleshes out Virgil's life—his Civil War service, the tragic loss of his first wife and daughter due to circumstances beyond his control, his later marriage to Alvira "Allie" Sullivan and his business activities and work in professions other than law enforcement. He also provides sound evidence for his contention that Virgil should be given credit for many of the acts of bravery which Stuart Lake would later attribute to Wyatt, including Virgil's key role in the incident at Tombstone where he was City Marshal and a Deputy United States Marshal at the time.

Aside from the chronicle of Virgil's life, Chaput provides the reader with a picture of western cattle and mining towns considerably at variance with the Hollywood image - peaceful places, the rare walk-down gunfight in the streets, the time of local law enforcement officials taken up with arresting drunks, collecting saloon and brothel license fees, searching for lost dogs and other such mundanities. Chaput suggests that Virgil Earp himself often became bored with the towns where he served in various law enforcement capacities.

Although his effort is adequate for a biography, the author might have ranged further afield and discussed the manner in which writers other than Stuart Lake have treated the Earp clan. His thoughts on two recent movies, *Tombstone* and *Wyatt Earp* would also have been appreciated. As it is, his research is impressive and his efforts to rescue Virgil Earp from the obscure niche to which he has been consigned is a significant effort.

Phillip I. Earl
Nevada Historical Society

The Archeology of the Donner Party. By Donald L. Hardesty, with contributions by Michael Brodhead, Donald K. Grayson, Susan Lindstrom, George Miller. (Reno, Las Vegas: University of Nevada Press, 1997. 156 pp., introduction, appendicies, notes, bibliography, index.)

The tragedy of the Donner Party is one of the most overromanticized segments of American history. Almost from the beginning, it was trivialized because of the inherent dramatic qualities and its grotesque finale. Even a recent Public Broadcasting System re-creation, while adhering to the basic textual evidence, lingered too long over the more gruesome details.

Hardesty's book seeks a balance by introducing the most painstaking and delicate of anthropological scholarship, drawing on all the evidence available. After a competent review of the historical literature aided by prominent schol-

ars, Hardesty brings "Archeology to the Rescue" and takes yet another look at the history and legends of the ill-fated group of 1846-47. The subtitle might have been appropriately used as the over-all name for the book, because the methods used here—the assembling of evidence from various disciplines—bring new insights to the history of this disaster, which has assumed near-epic status in the annals of the West.

Hardesty, a long-time professor of anthropology at the University of Nevada, Reno, has assembled and thoroughly analyzed works of earlier scholars and has provided more extensive detail than has ever been available on the artifacts. His co-contributors are leaders in their respective fields. This team has gone beyond and beneath the historical record, has provided an antidote to the sensational media presentations of the past and present. This book was more than a decade in the making, and it shows.

There is a description of the excessive baggage carried by the party, which has often been emphasized in the literature. The systematic analysis of what was retrieved at the camps identified at Alder Creek and Murphy's cabin enables us to contemplate the story from the minutiae, which has not been previously possible. We are offered a chapter on "Donner Party Baggage," plus an inventory of the tableware, tea service, ceramics, table utensils, clothing, hand tools, and other personal items which emerged under the trowels of the archeologists. It comes as a surprise to this reviewer how much paraphernalia remained with the emigrants when they reached the Sierra foothills.

A systematic analysis of the patterns of death and survival of the Donner party participants consistutes one of the appendicies, written by Donald K. Grayson. The relatively high survival rate of women and children as compared with middle-aged men is worthy of more contemplation than this text affords.

The Archeology of the Donner Party does not claim to solve all the mysteries that remain about those who were victims of the disaster of 1846-47. Hardesty and his colleagues are candid about their uncertainties and the absence of some crucial pieces of evidence. But they have provided an abundance of new data, commentary, and scholarship on a topic that has not yet been exhausted, either in popular interest or in scholarly opportunity. This brief and manageable book is a testimonial to the value of inter-disciplinary scholarship.

James W. Hulse
University of Nevada, Reno

Gathering Traces of the Great Basin Indians. By Dennis Cassinelli. (Reno: Wester Book/Journal Press, 1996, iv + 145 pp., ill., map, bibliography, and index.)

In *Gathering Traces of the Great Basin Indians,* Dennis Cassinelli promises a book on Indian artifacts that is enthusiastic, interesting and understandable to the general public. The author succeeds as he explains how projectile points and other tools were made and how they are classified. He falls short, however, in explaining how the study of these artifacts provides insights on the people who made them.

Mr. Cassinelli presents a personal, earthy account of himself and his family, and how they collected artifacts from northern Nevada and the eastern front of the Sierra through the years. At the same time he acknowledges federal and state laws protecting antiquities and encourages the public to find legal means to enjoy archaeology. The volume begins with a discussion of climate change and environmental factors that might have affected human settlement of the Great Basin. Unfortunately, the author does not cite sources of his information nor does he consider the variations during the last 10,000 years that could have led to the use of the bow and arrow, the migration of peoples, or the introduction of horticulture.

Most of this book concerns the classification of stone tool artifacts, particularly projectile points. The book is a guide for artifact collectors in northern Nevada to type projectile points based on several measurable attributes using a method developed by Dr. David Hurst Thomas, a professional archaeologist, of the American Museum of Natural History. Cassinelli does not cite other methods of typing projectile points. Nor does he relate that this system of typing points becomes less reliable as one moves further from the central Great Basin.

In *Traces* Cassinelli speculates on migration and ideological connections between the Great Basin and MesoAmerica. Such links are difficult to demonstrate given the mixing of peoples that took place in the Americas during the last 14,000 years or more. Understanding human migration requires DNA and linguistic studies, as well as archaeological investigation. Professional archaeologists have the ability to type projectile points and other artifacts and remains to understand how people made a living. For example, bones and seeds found in a site, with analysis to determine that they are not naturally occurring, would tell archaeologists what people were eating. However, interpreting religious beliefs of an extinct people is a more difficult matter, because lacking writing from this time, we do not know what people were thinking or believing.

The author's visits to Lovelock Cave and the Yucatan coast inspired him to offer advice on the interpretation and management of sites and the study of artifacts. One of the most exciting moments of his trip to Mesoamerica occurred

when he surreptitiously viewed archaeological excavations at Copan. In these latter chapters, the author advises the federal and state governments to be more responsive to the needs of the public but he fails to recognize that federal agencies such as the United States Forest Service, are encouraging greater public visitation and participation in archaeology, for example, in the Passports in Time program. Federal agencies can foster the public's love affair with archaeology within the bounds of the law. Organizations such as Amarcs and ArchaeoNevada also provide opportunities for site visits and volunteer work at professional archaeological excavations. Other agencies would be wise to heed Cassinelli's advice to interpret more sites, allow more public participation in projects, and prepare more popular publications in archaeology.

The author also uses *Traces* to castigate federal and state agencies for not displaying all artifacts collected, such as his own Cassinelli-Perino collection, and equates "weekend pot hunters"(those who collect artifacts illegally) with professional archaeologists. This is a shockingly inaccurate comparison. Professional archaeologists collect artifacts as well as bones, pollen, ash and seeds, not for their looks, but because their study can tell us something about the people who made and used them. Not all artifacts can be displayed for public viewing, but they do remain curated for current and future study. Cassinelli fails to recognize that the key developed by Thomas resulted from an intensive long-term investigation and analysis of sites in central Nevada, carefully correlating radiocarbon dates with the projectile points, a process that has provided Cassinelli and others with a system to type artifacts in their collections. The pot hunter, on the other hand, collects artifacts he considers attractive for display. He often does not record the location of a particular artifact, and discards or destroys other parts of archaeological sites, including bones, ash, seeds and other artifacts, in the quest for the perfect projectile point.

Cassinelli also criticizes professional archaeologists for being uninterested in studying private collections. A professional archaeologist is not likely to find much value in studying private collections unless the owner has kept records on each artifact's location. Artifacts studied in isolation from other components of a site are stripped of their context and have limited research potential.

Cassinelli provides information about federal antiquities laws but readers should contact specific federal agencies about collecting policies. In addition, collectors should be cautious about their own interpretations of the law, because public officials and the courts may interpret the laws differently. Regardless of the legality of collecting one kind of artifact or another, their removal lessens the research value of an archaeological site, limiting the story these artifacts might tell to all of us.

Gathering Traces of the Great Basin Indians is fine as a beginner's guide to identifying stone tool artifacts from northern Nevada. Cassinelli knows how to tell a story and hold the interest of his audience. His book is clear evidence of his love of Nevada and its past. If readers wish to discover more about the peoples

living in the Great Basin, they might peruse *Handbook of North American Indians, Volume 11: Great Basin,* edited by Warren dAzevedo (Smithsonian 1986), and if interested in the effects of environment on human settlement, they could turn to the well-written *The Desert's Past* by Donald Grayson (Smithsonian 1993).

Alice M. Baldrica
Nevada State Historic Preservation Office

New Resource Materials

Nevada Historical Society

The Research Library has received an important collection of family papers from Frank A. Schmidtlein of Severna Park, Maryland. Donated in memory of his parents, Frank M. and Grace H. Schmidtlein, these materials document the lives and business activities of various members of a pioneer Nevada family, most prominently George Washington Schmidtlein, grandfather of the donor, who was a rancher and miner in central Nevada beginning in the 1860s. The operation of ranches owned by the Schmidtleins in Big Smoky Valley and in the Austin and Kingston areas is described in correspondence and in legal and financial records, as are George's and his brother Henry's mining activities in the Santa Fe Mining District, at Round Mountain, and at Tonopah, where George was a partner of Harry Stimler and one of the first developers of that camp. Records of the Santa Fe district, where George served as recorder for many years, are contained in three volumes that cover the period 1863-1917. Also included in this important collection is a fascinating group of illustrated letters by itinerant prospector O.S. Alers, which are addressed to George's daughter, Jessie, as well as other family members, and a detailed ledger from the Dyer Brothers' general store in Austin for the years 1881-1882.

Another recently acquired collection is the personal papers of Bertha Eaton Raffetto (1885-1952), the colorful Nevada civic leader, political figure, singer, songwriter and poet, who composed the state's official song, "Home Means Nevada," in 1932. A welcome gift from Bertha Raffetto's daughter, Frances C. McDonald of Auburn, California, the collection is made up substantially of correspondence and scrapbooks of newspaper articles documenting the successful efforts by Raffetto and others to have "Home Means Nevada" adopted as the official state song in 1933. Also in the collection are numerous poems (among them *The Ballad of Katie Hoskins*, which was published in 1948), speeches, and letters by Raffetto, as well as newspaper and magazine articles describing her varied literary, civic, and political activities, and an article of hers titled, "How and Why 'Home Means Nevada' Came to Be Written." Supplementing Bertha Raffetto's papers are legal documents which record the transfer, by Frances McDonald, of copyright to "Home Means Nevada" to the state of Nevada in 1989.

Records of the Rebekah Lodge which existed at Verdi, Nevada, until 1991 have been received from seven of its former members. Maxine Anderson, Wanda Hansen, Dorothy Harker, Ruby Leavitt, Elizabeth McKenzie, Virginia Moscone,

and Lillian Powning, who all belonged to Crystal Lodge #32, Rebekah Assembly, Independent Order of Odd Fellows, have donated a two-part photograph album which contains not only portraits of members from 1915 to 1954, but also information on activities of the lodge and the lives of its members. We wish to thank the donors for their gift of a valuable historical document which tells us much about the past of a significant Nevada community and its society, as well as about Crystal Lodge and its members.

The detailed fire insurance maps of American cities produced and updated by the Sanborn Map Company and other firms have long been useful tools employed in studying urban development. In Nevada, these maps have recorded the growth—and decay—of nineteenth-century mining camps, the steady but unexceptional development of modest agricultural and commercial communities, and the growth of gaming centers such as Reno and Las Vegas. The Society's holdings of fire insurance maps have been notably enhanced with the addition of a 1947 Sanborn atlas for Reno. This unique volume, which was previously unlisted among insurance atlases for Nevada, and which depicts post-World War II growth in the state's largest city, is the gift of longtime Reno resident Peter Echeverria.

Andrea Mugnier and Eric Moody attended the recent auction at the Nevada Club to acquire historical gaming artifacts for the Society's collections. As a result, two slot machines have been added, including a 1963 Jennings three-reel slot. Also acquired at the auction were two of the Nevada Club's light-up jackpot signs, two decks of Nevada Club cards, and a slot machine front plate. These excellent examples of Nevada's gambling history were purchased with funds from the Norm Nielson Memorial Fund.

Eric Moody
Curator of Manuscripts

Andrea Mugnier
Registrar

Special Collections Department, University of Nevada, Reno

The Bliss Family is closely linked to the early economic development of the State of Nevada and to Lake Tahoe in particular. D.L. (Duane Leroy) Bliss came to California in 1849. After working in several mining and economic ventures, he moved to Gold Hill, Nevada, in 1860. Bliss, Henry M. Yerington, and D.O. Mills formed Yerington, Bliss and Company in 1871 and purchased extensive timber land on the eastern shores of Lake Tahoe and along Clear Creek. The partners formed the Carson and Tahoe Lumber and Fluming Company two years later, with three major divisions: logging, milling, and transportation. As

the century drew to a close and timber became scarcer, Bliss realized the need for a new industry in the Tahoe Basin—tourism. To that end he formed the Lake Tahoe Transportation Company (later the Lake Tahoe Railway and Transportation Company) which developed Tahoe Tavern and Glenbrook Hotel, built a narrow gauge railroad between Truckee and Tahoe City, and constructed the luxury steamships *Tahoe, Meteor, Tallac,* and others. After D.L.'s death in 1907 his family continued to manage the vast company holdings.

A major collection of Bliss Family papers has been donated to the Special Collections Department by William W. Bliss. Consisting of eleven cubic feet of papers and over four hundred maps and drawings, the collection dates from 1869-ca 1960s. There are no restrictions on access to the collection. Extensive collection guides are available to assist in locating materials within the collection. The Special Collections Department is grateful to William W. Bliss for this gift, and to Richard D. Adkins, historian with Summit Envirosolutions, for facilitating transfer of the maps and drawings.

This gift complements an earlier acquisition of Carson and Tahoe Lumber and Fluming Company records. Included in the new accession are records of the Carson and Tahoe Lumber and Fluming Company, Glenbrook Company, Glenbrook Hotel Company, Glenbrook Improvement Company, Lake Tahoe Railway and Transportation Company, Barr Realty Company, Sierra Realty Company, and Nevada Lumber Company. These records extensively document the acquisition and management of land and properties at Glenbrook, Nevada, and Tahoe City, California. Included are legal files, deeds, patents, leases, agreements, judgements and decrees, minute books, articles of incorporation, resolutions of the boards of directors and much more. Maps and drawings illustrate the location and extent of Bliss holdings, plans for Glenbrook and Tahoe Tavern structures, water rights sources, plans and profiles for the rail route between Tahoe City and Truckee, and rights-of-way acquisitions.

The papers of Ty Cobb, Nevada journalist, have been donated to the Special Collections Department by his family. Cobb was born in Virginia City in 1915 and was a graduate of the University of Nevada. For over thirty-six years he worked as a sports writer, editor, and columnist for the *Nevada State Journal* and *Reno Gazette-Journal.* After his retirement in 1975 he continued to write his popular column, "Cobbwebs," the last of which was published posthumously in May 1997. A selection of his columns were published at *The Best of Cobbwebs by* the University of Nevada Press.

The Ty Cobb collection contains materials about his education and extensive files of his published articles and columns, including his earliest published pieces in a Reno Boy Scout newsletter and a state prison magazine. Many files document his interest in sports, including those related to special events honoring Cobb for his promotion of sports in Nevada. There is also a scrapbook which documents the political career of Ty's father, William Cobb. A small collection of photographs accompanies this collection, which consists of five cu-

bic feet and dates from 1881-1997. A collection finding aid is available to assist researchers.

Susan Searcy
Curator of Manuscripts

Statement of ownership, management and circulation (Required by 39 U.S.C. 3685). 1. Date of filing: October 1, 1998. 2. Title of publication: *Nevada Historical Society Quarterly*. 3. Frequency of issue: Quarterly. 4. Office of publication: Reno, Nevada 89503. 5. Location of headquarters: Reno, Nevada 89503. 6. The names and addresses of publishers and editorial director are: Peter L. Bandurraga, Historical Society, Reno, Nevada 89503. 7. Owner: Nevada Historical Society (State of Nevada Agency), 1650 North Virginia Street, Reno, Nevada 89503, a nonprofit organization. 8. The bondholders, mortgagees and other security holders owning or holding one percent or more of total amount of bonds, mortgages or other securities: n/a. 10. Average no. of copies each issue during preceding 12 months: Total number of copies printed, 1973, actual no. copies of single issue published nearest to filing date, 1973 mail subscription during preceding 12 months, 1723, mail subscription nearest to filing date, 1723, total paid and/or requested circulation during preceding 12 months, 1723, total paid nearest to filing date, 1723, free distribution by mail, carrier or other means, samples, complimentary, and other free copies during preceding 12 months, 59, free distribution nearest to filing date, 59, total distribution (sum of C and D) preceding 12 months, 1782, nearest to filing date, 1782, copies not distributed during preceding 12 months, 191, copies not distributed nearest to filing date, 191, total during preceding 12 months, 1973, total published nearest to filing date, 1973.
I certify that the statements made above are correct and complete.

(Signed) Peter L. Bandurraga, Director

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Founded in 1904, the Nevada Historical Society seeks to advance the study of the heritage of Nevada. The Society publishes scholarly studies, indexes, guidebooks, bibliographies, and the *Nevada Historical Society Quarterly;* it collects manuscripts, rare books, artifacts, historical photographs and maps, and makes its collections available for research; it maintains a museum at its Reno facility; and it is engaged in the development and publication of educational materials for use in the public schools.