Maps and Mining: Some Historical Examples from the Great Basin

by Richard V. Francaviglia

"It seems to me that several pages have been lost from mining history . . . ."
Emmett L. Arnold, Gold Camp Drifter, 1973

When prospectors first encountered the Great Basin in the nineteenth century, they found a vast area of north–south trending mountains alternating with desert valleys. The region's native inhabitants—mostly Washoe, Shoshone, and Paiute Indians—were well acquainted with the area's biological resources but had little interest in its mineral wealth. Some lived along dependable streams flowing from the mountains at the region's margins, but most spent much of their time migrating from place to place as hunters and gatherers. The early prospectors not only faced the challenge of surviving in this difficult land (which required knowledge of springs, trails, and other features), but also had to determine the location of mineralized areas. In both cases they likely got some important assistance from native informants as they quickly accumulated geographic knowledge, both to succeed and to survive.

Once mineralized areas were found, their locations needed to be identified and codified. Although literally marking it with a stake might suffice to "stake" a claim, its precise location had to be determined for reasons pertaining both to the mine itself and to the relationship that it would have to other mines that would inevitably be located near it. Thus arises a perennial need of all miners—the *mapping* of areas of promise. Original mapping was cognitive (i. e., "mental mapping"), but hand–drawn maps were soon created. These *manuscript* maps served several purposes beyond the simple depiction of mineralized areas as separate from non– (or lesser) mineralization. They brought people and supplies to the mines and thus were indispensable for the actual operation of mines beyond the most rudimentary stages of exploitation. As mining became more sophisticated and "civilization" reached the Great Basin, a wealth of *printed* maps depicted the region's resources. These printed maps could be reproduced in large quantities—a prerequisite for the promotion and capitalization of mines.

This paper addresses how maps are employed by miners and others who promote and develop mines. Given the location of the year 2000's MHA convention in Tonopah, I thought it appropriate to focus on mines in the Great Basin; thus, I will describe case studies from Death Valley through Nevada to the mines in Utah's portion of the region. I shall use a number of printed maps that join the written record in describing these mines. Although many maps have been lost—like other lost pages of mining history—those that we do have reveal both the importance and complexity of mining's relationship to cartography. Those illustrated here are either from my personal collection or from the Special Collections at the University of Texas at Arlington. These maps will serve as examples, revealing both the complex *process* of mapping mining districts and the amazing *variety* of maps that can assist the mining industry.

Mining and Mapping in Geographic Context

The Great Basin was the last region of the conti-

nental United States to be fully explored.[1] As late as the 1830s and 1840s, it was indicated as part of Upper California on maps—many of which wisely depict the region as blank "*terra incognita.*" But even though the geography of this part of northern Mexico was poorly understood, that did not stop cartographers from speculating. Some maps of the region feature the mythical Santa Buenaventura River running through the Great Basin directly to the Pacific Ocean, although no river actually does.[2] Still other maps depict a huge east–west trending mountain range straddling the region when, in fact, the region's mountain ranges run north–south—that is, are part of the basin and range physiographic province. Aided by observations of earlier explorers, John Frémont's expedition of 1844 helped correct some of the glaring cartographic errors. It was Frémont (and his expedition's cartographer Charles Pruess) who popularized the term "Great Basin" for the region, but even his maps contained some glaring errors—such as the mythical east–west range of mountains referred to above. Most of the geographic errors persisted up to the U.S.–Mexican War (1846–8).

That conflict surrendered the Great Basin to the United States in 1848, just a year after the Mormons arrived to claim it as part of their great theocratic state of Deseret.[3] Beginning in the late 1840s, numerous Mormon expeditions described and mapped portions of the region. However, these maps were generally not available to the non–Mormons who comprised the bulk of the prospectors—church leaders having forbade Mormons to mine precious metals. Then, too, the Mormons readily consulted the maps prepared by the U.S. government. By the mid–1850s, much of the Great Basin was firmly part of the United States, but the area had only territorial status and had a bicultural character, as Indians and Mormons co–existed in an uneasy alliance. Much of the region was now part of Utah Territory, which stretched from the Wasatch Range to the Sierra Nevada Mountains.

Miners soon became the third major group to occupy the Great Basin, the development of which is closely related to mining events elsewhere. Scattered groups of forty–niners had traversed portions of the region on their way to California, but most activity in the Great Basin occurred after the California gold rush began to fizzle. Serious prospectors moved into the area from the *west*, giving the desolate Great Basin a second look after the allure of California waned. Still other prospectors hailed from Colorado, which in 1859 was experiencing a gold rush at Denver on Cherry Creek. That same year miners and other newcomers to the Great Basin devastated the Paiute Indians in the Pyramid Lake War. These events more or less coincided with the early discoveries of silver in western Nevada. Thus it was that prospecting helped fill in the geographic blanks on maps of Utah Territory and later of the new Silver State, carved from Utah Territory in 1863 after the booming Comstock Lode brought Nevada to national attention. But it is significant that the maps created by both military and scientific explorers, as published in government reports, often served as base maps for would–be prospectors who desired the latest information about the region's geography. Armed with these government maps, some prospectors gained a general idea of the region's principal geographic features. These included fresh water rivers that evaporated in salty sinks, large lakes that were vestiges of ancient inland seas, and prominent mountains. Many of these last soon bore the names of U.S. explorers and scientists—Walker, Steptoe, Wheeler—names which in many instances obliterated early Shoshone and Paiute names. Yet some Indian geographic names, including Tonopah, have persisted to the present.

Consider the challenge facing those who wished to precisely locate a mine in such a vast region. First, they needed to determine the context of the mine in relation either to familiar landmarks or to previously surveyed points. Recorders of claims in mining districts had to think both legally and spatially. In words reminiscent of W. Turrentine Jackson's *Treasure Hill: Portrait of a Silver Mining Camp* (1963), a historian perceptively noted that " . . . the recorder was the key man in the mining district."[4] A description of Nevada's Shoshone mining district underscores the challenges of determining location. This district, part of Township 11 North, Range 68 East, is on the west slope of the Snake Range. As the Nevada State Mineralogist described it in 1870:

> This district joins Lincoln on the south and has all the same natural facilities for mining. The mines . . . are situated on a low spur of the mountain called Mineral Hill. Another spur further north called Lookout Mountain has a number of mines. East of these hills is a cañon, at the head of which a saddle connects the hills with the main mountain. This saddle rises into another ridge known as the Hotchkiss Hill. North of this there is a wide cañon in which a village is surveyed. North of this cañon there is a bench or level place on the top of a hill known as Bromide Flat, where there are mines. Nearly the whole space described is covered with nut pine and mountain mahogany. To the east, the mountain rises very high, probably ten thousand feet, and is capped with limestone.[5]

The key to determining location accurately amidst such convoluted topography was the survey, and surveying was conducted at many levels. In the case of mines in the Intermountain West, accurate local surveying was built upon the general survey, which placed a particular location in reference to a developing national grid of baselines and meridians. Thereafter, local surveyor's maps formed the basis for delineating individual mines and were also the basis for district maps.[6]

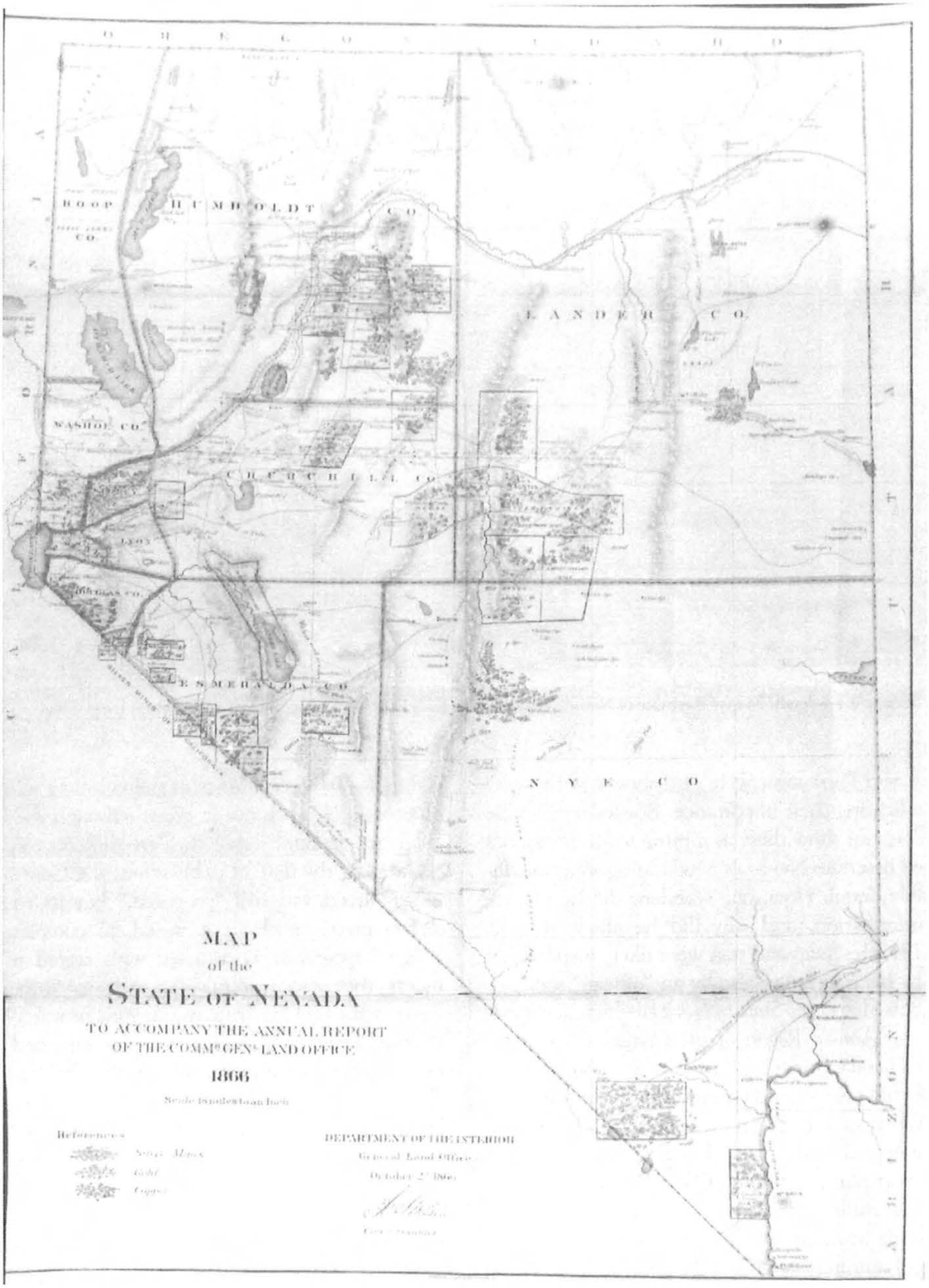
Like mining itself—which also evolves as knowledge of places increases—the development of mapping occurred in stages. In the *exploratory* stage of map–making, large regions were mapped based on brief expeditions. The *legal* stage occurred because mining districts, once created, required maps to depict the locations and boundaries of specific mining properties. In the subsequent *promotional* stage, railroads and other companies often indicated the presence—or supposed presence—of mineral deposits on maps of their routes. In the *developmental* or *operational* stage of cartography, specific properties were mapped in detail to facilitate the actual development or operation of mines. In addition to classifying maps by these basic functions, mining–related maps can also be classified by their authors or sponsors: Some were *private* maps, the products of individual entrepreneurs or companies. Others were *governmental*, such as the numerous mining district maps prepared by the territorial and state governments and such federal agencies as the Bureau of Mines. Whatever their origins or purposes, a review of maps of this region (and many others throughout the western United States) reveals three basic facts. The first is the culture's near *obsession*, in both the private and public sectors, with depicting mineral deposits or mining areas. The second is the *confluence* of two types of messages about mining—narrative and graphic—in each map; that is, maps communicate in both text (e.g. "silver mine") and symbols (e.g. a crossed pick and shovel). The third is the *progressive improvement* in depicting mines that accompanied general improvements in surveying, mapping and printing techniques. All three confirm the presence of an increasingly sophisticated mapping *process* by which deposits initially vaguely defined became mature mining areas.

Mining Related Maps: Some Representative Examples

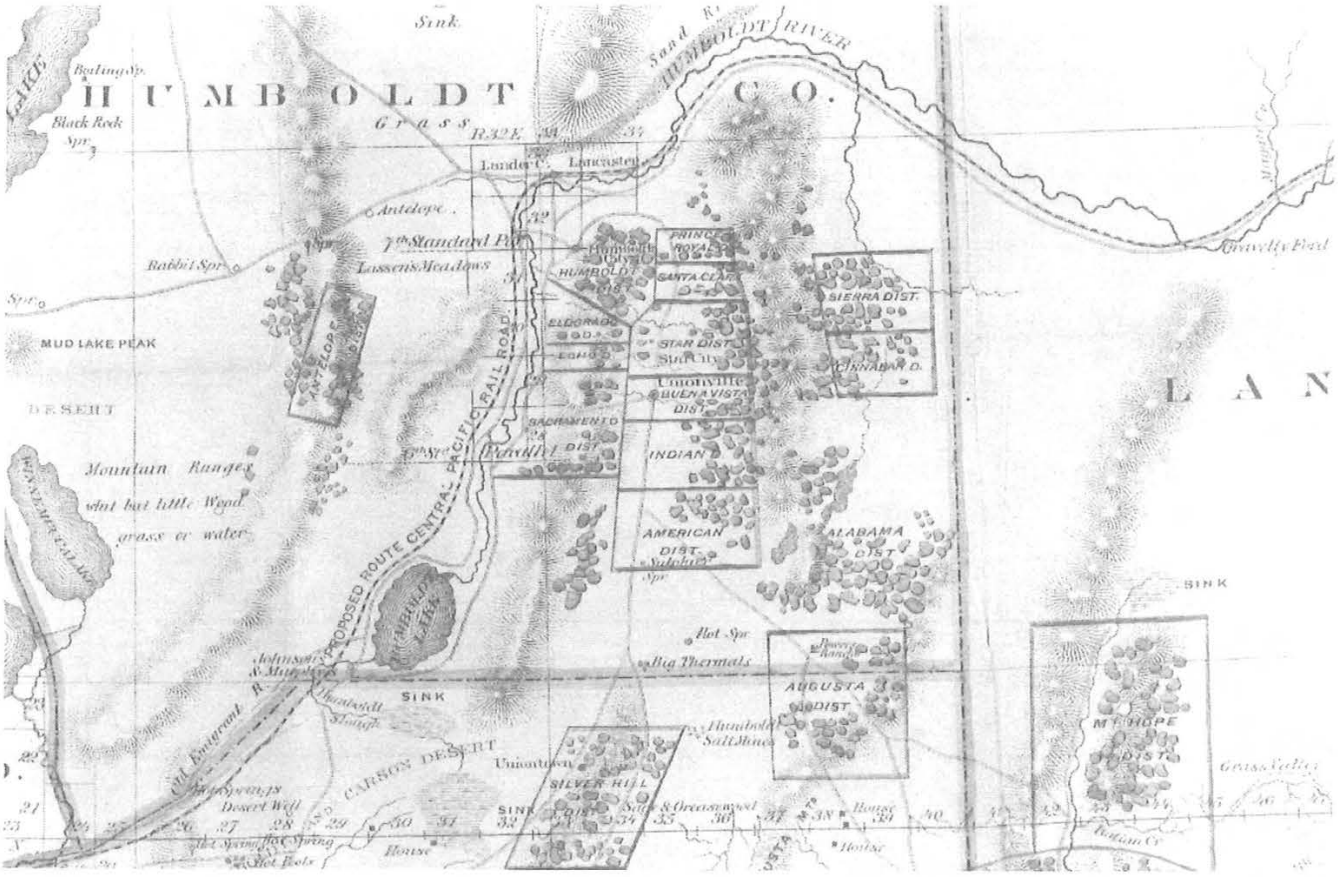
The following seven selected maps shed light on the process by which miners employ cartography to develop their finds. Like all maps, these examples must always be considered in several contexts—namely, that of the *society at large*, their *sponsors*, their *cartographers*, and of *other maps* of the same area.[7]

Example 1: Map of the State of Nevada (1866) by the [U.S.] Department of the Interior, General Land Office.

When Samuel Bowles traversed the Great Basin in the late 1860s, he observed that "Nevada's claim to the name of the Silver State is not only good yet brightening." Bowles optimism sprang from the development of mines all across the state. "How well these later mining discoveries and developments are distributed over the broad area of the State will be impressed on every student of the map," he concluded.[8] The map which accompanied Bowles' book revealed that Virginia City had company by then, as



Example 1: Map of the State of Nevada (1866) by the [U.S.] Department of the Interior, General Land Office.



Example 1—detail: Map of the State of Nevada (1866) by the [U.S.] Department of the Interior, General Land Office.

Austin and Parranagat were also shown, with asterisks indicating their importance. Bowles' small-scale map does not show these as mining towns *per se*, but his text describes Nevada's new mining areas in considerable detail. How, one wonders, did he acquire this information, and why did he allude to "the map"? Bowles' map and text were likely inspired not only by his travels but also by an "official" source—the 1866 *Map of the State of Nevada* which accompanied the *Annual Report of the Commissioner of the General Land Office*.

Readily available to enterprising speculators, this map is part of a series, and it matches the California map prepared at the same date and scale. The year 1866 is important, for the Great Basin was rapidly losing its status as *terra incognita*. Of special interest to mining historians are the identifications of three types of mining areas—silver, gold, and copper—generally depicted as "districts." The map's color coding features gold mines in yellow, silver mines in blue, and copper mines in green—though the latter colors are so similar that they are difficult to differentiate. At the date of publication, the Central Pacific railroad was still "proposed," but its route is shown pretty much as it would be completed in 1869. Topography is depicted with regard to elements that can sustain life, such as "Mountain Range whit [sic] but little wood, grass or water" near Pyramid Lake; or "Covered with Nut Pine and Juniper" in southern Esmeralda County. The map also depicts other *geographical or geological features*, e.g., "Hard White Clay" in Esmeralda County, or "Coal Signs" in northern Nye County. Note that many of Nevada's famed mining districts—the Comstock, Reese River/Austin, Aurora (depicted as being in California on early maps!) —are shown, but that the area around Tonopah is shown as "Desert without wood water or Grass [sic]" and as the site of a "Soda

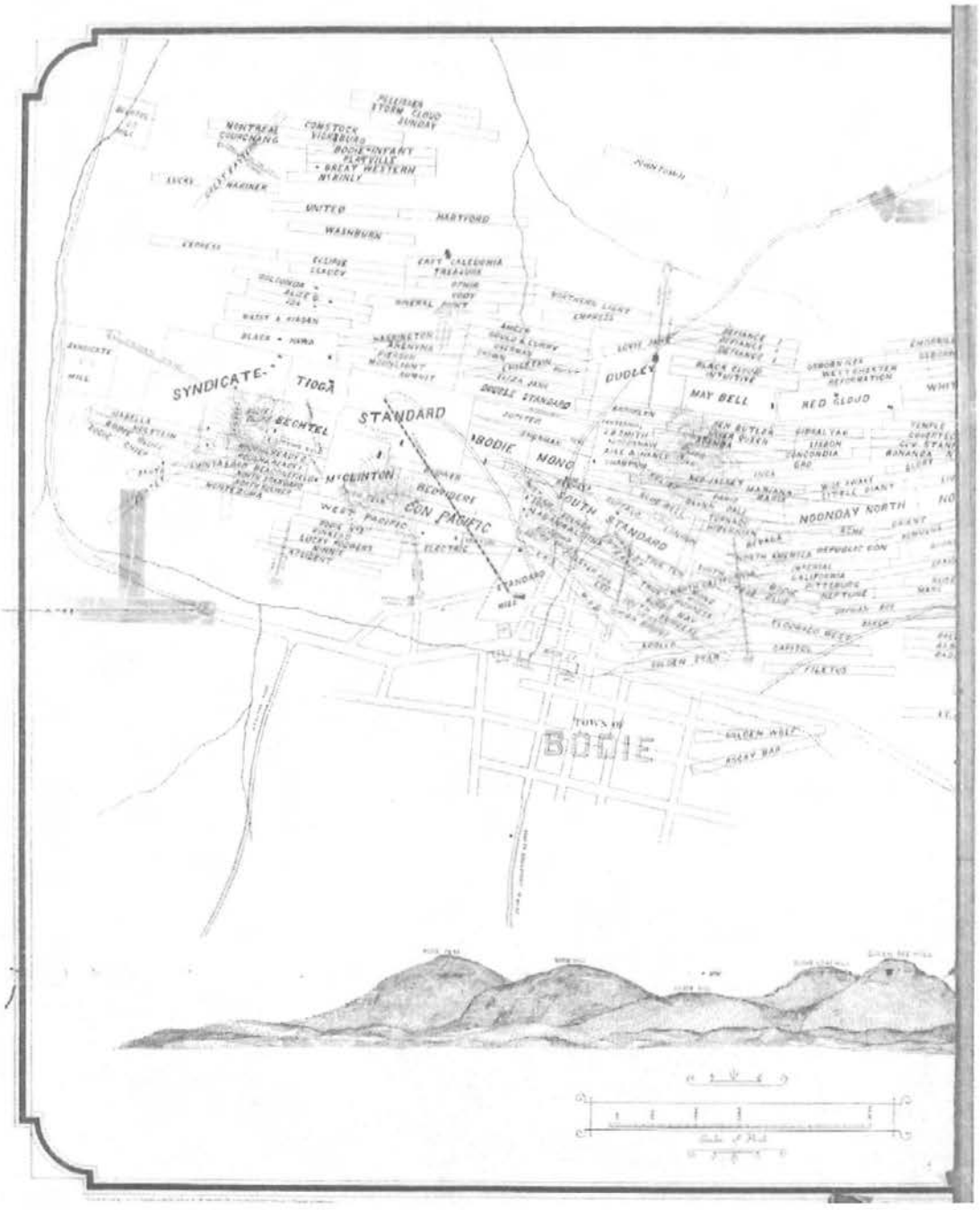
Spr[ing]." Although the town of Silver Peak began to develop as early as 1865, it is not shown. It would take another third of a century for this seemingly barren area to become the site of Nevada's last big bonanza—the Tonopah/Goldfield rush of c. 1900–7. This map nicely illustrates the mapping of mining at a relatively small scale (hence showing a large area) to place activities in broad geographic context, but of course such a map cannot show individual mining districts in much detail.

Example 2:
Map of Bodie Mining District
Mono Co. Cal[ifornia].

As a mining district develops, provision is made for recognition of individual or corporate claims. Typical of the delineation of a developing mining district, this 1879 map by R. M. Smythe, M.E., depicts the locations and boundaries of several hundred mining properties. A topographic drawing or profile is also provided to give the map reader some

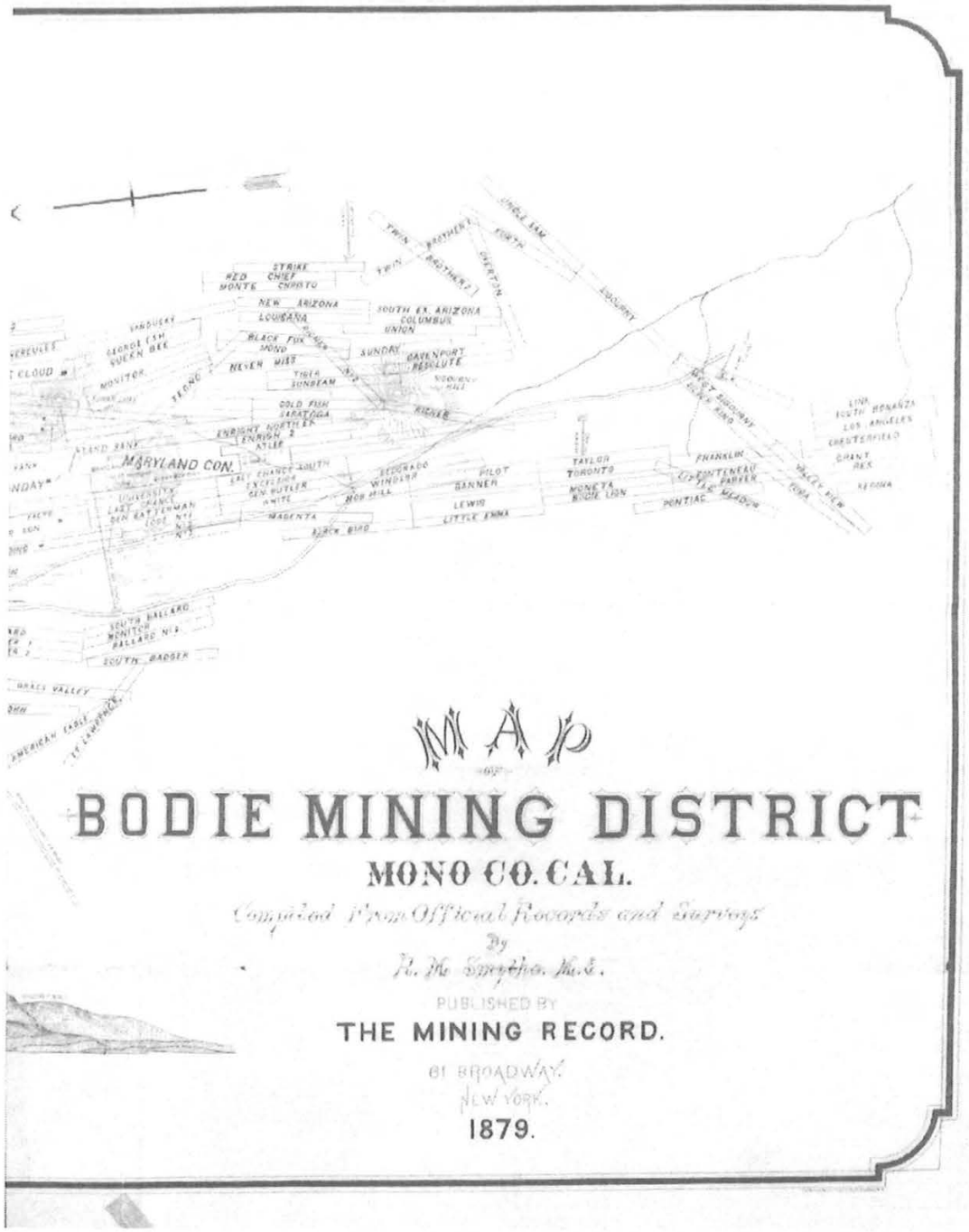
Example 2—Detail: Map of Bodie Mining District Mono Co. California.

concept of the terrain, and the same prominent hills are also depicted on the map proper—which is a planimetric delineation of the claims to the highly mineralized area just east of the downtown section of Bodie. At this date, the Standard mine, tramway, and mill are prominent features, and two other mills (the Syndicate and the Bechtel) rim the district to the north. The map's private–sector producer, *The*



Example 2—West Half: *Map of Bodie Mining District Mono Co. California.*

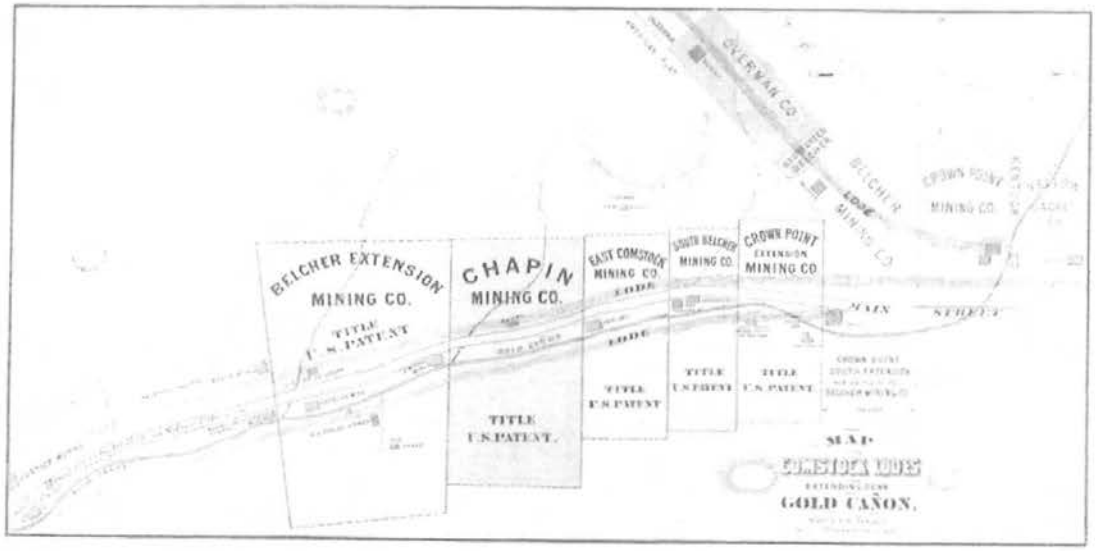
Mining Record, was a widely–read journal which described and promoted mining interests. It is not known whether Smythe used a previously published survey map to produce this map, but Smythe's map was "entered according to Act of Congress in the year 1879 by A. R. Chisholm in the Office of the Librarian of Congress at Washington" and thus became part of the cartographic and historical record.



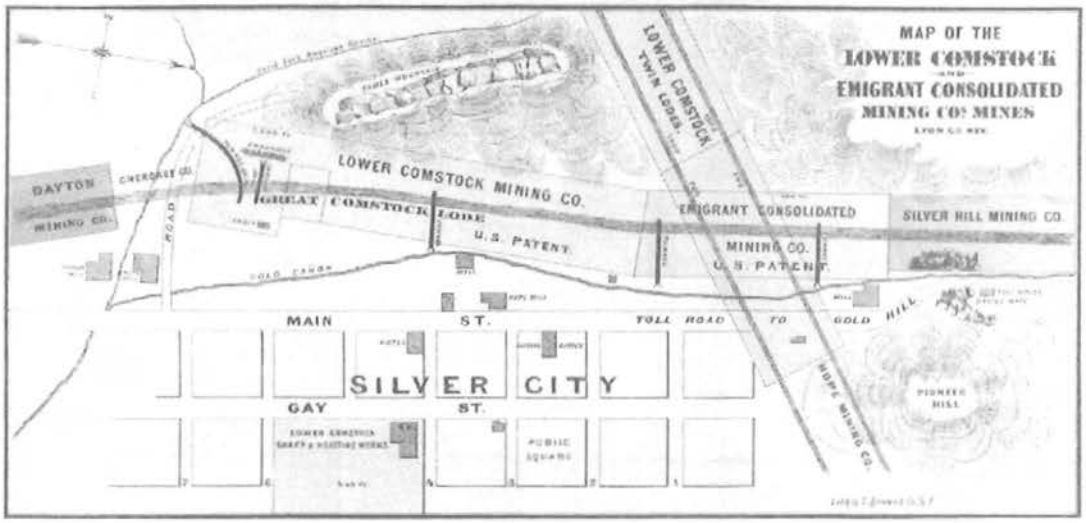
Example 2—East Half: *Map of Bodie Mining District Mono Co. California.*

Example 3:
Map of the Comstock Lodes Extending Down Gold Cañon and Map of the Lower Comstock and Emigrant Consolidated Mining Cos Mines

These two maps are presented to show the close relationship between mining and settlement. Both were prepared by G. T. Brown and Co. of San Francisco, and are typical of late nineteenth century mining district maps. Use of color helps differentiate the mining properties from each other, and the patent status of these properties is also indicated. The "Comstock Lodes [sic]" map also indicates the general trend of the "lode," which is reaffirmed by the location of active and abandoned shafts, and "works." The stream in Gold Canyon provides the classic location for stamp mills, and no fewer than eight are indicated here. Similarly, the "lode" is depicted on the map of the Lower Comstock, as are mills and tunnels, and cultural features such as the express offices and toll houses. The rendering of topography on this map exhibits some flair, as when it attempts to depict both Table Mountain's prominent geological structure and its visual impact.



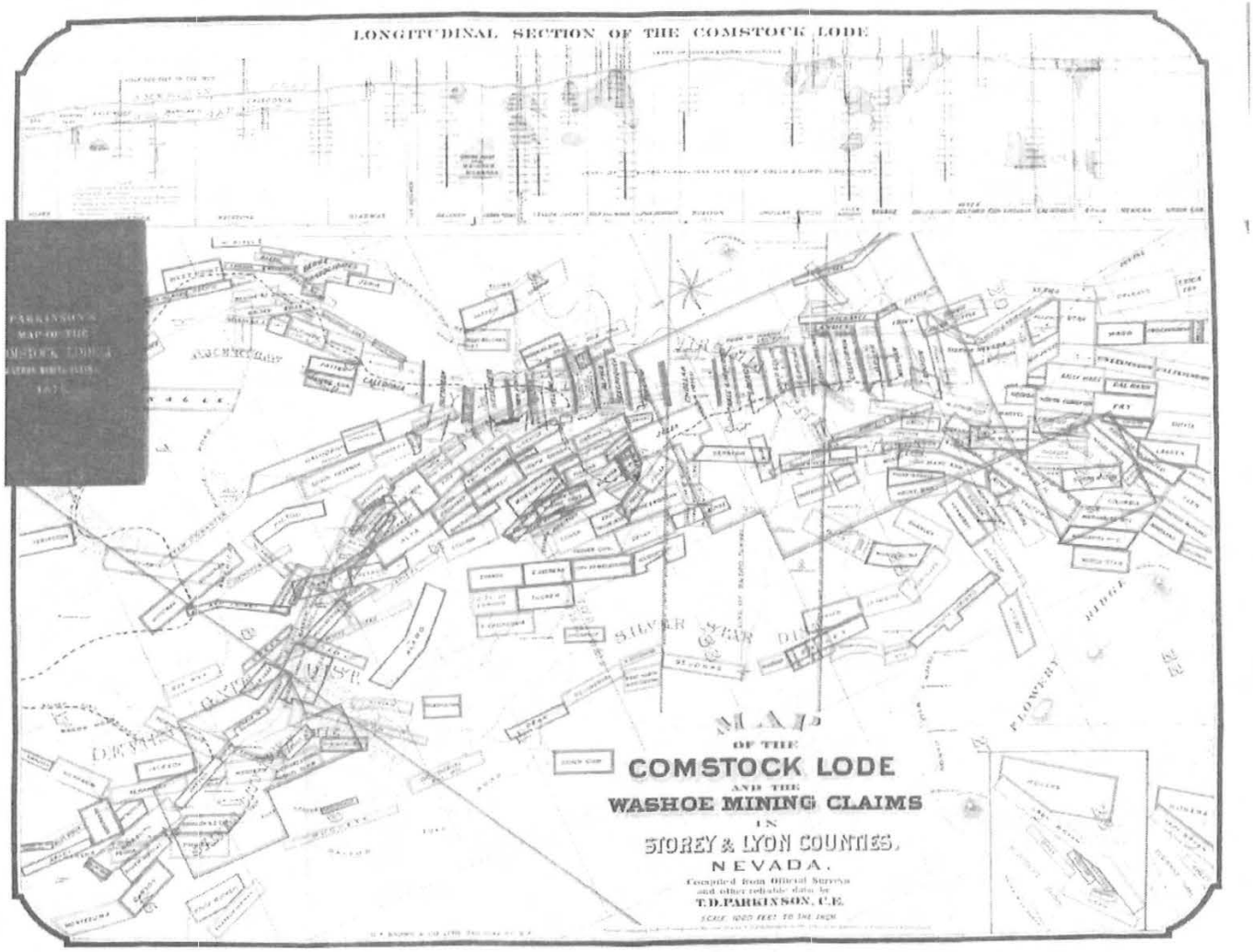
Example 3: *Map of the Comstock Lodes Extending Down Gold Cañon*



Example 3: Map of the Lower Comstock and Emigrant Consolidated Mining Cos Mines

Example 4: Map of the Comstock Lode and the Washoe Mining Claims in Storey and Lyon Counties, Nevada

This map was compiled by T. D. Parkinson from "official surveys and other reliable data." Produced at a scale of 100 feet to the inch by G. T. Brown and Co., Lithographers, in San Francisco, this map both provides both planimetric and longitudinal views. In the planimetric depiction, each mining property is indicated with colored ink boundaries, while the coordinated longitudinal section gives the reader an idea of the subsurface mining operations and geology— the lodes are shown as gray masses reached by numerous vertical mine shafts. Croppings (spelled "coppings" in one place) are indicated on the planimetric map, along with prominent cultural features such as streets, reservoirs, and railroads. It is significant that this map was prepared in a red leather case as a folded pocket map bearing the gilded letters "Parkinson's Map of the Comstock Lode & Washoe Mining Claims. 1875." This packaging recognizes that portability would be important to the map's marketing and use. One can only wonder whether this particular map actually traveled to the Comstock, tucked in someone's pocket, or if it was simply consulted by would–be investors studying the district from afar.



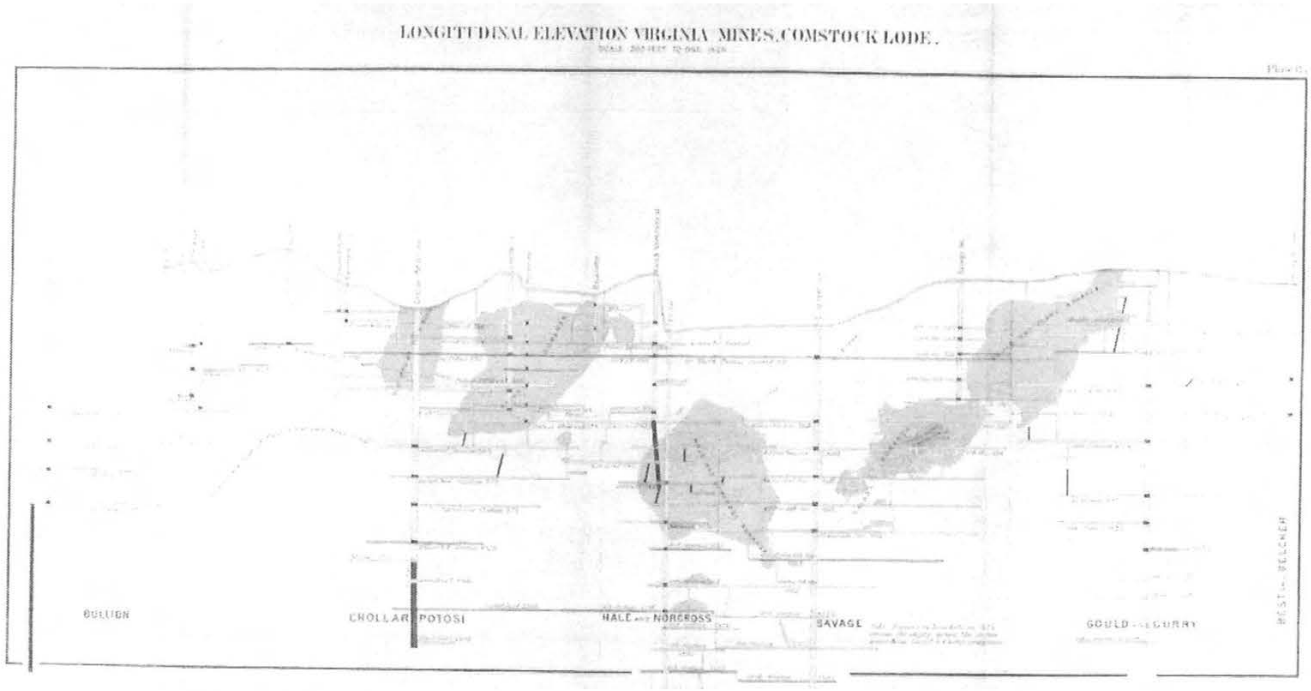
Example 4: Map of the Comstock Lode and the Washoe Mining Claims in Storey and Lyon Counties, Nevada

Example 5:
Horizontal Map and Longitudinal Elevation
Virginia Mine Workings Comstock Lode.

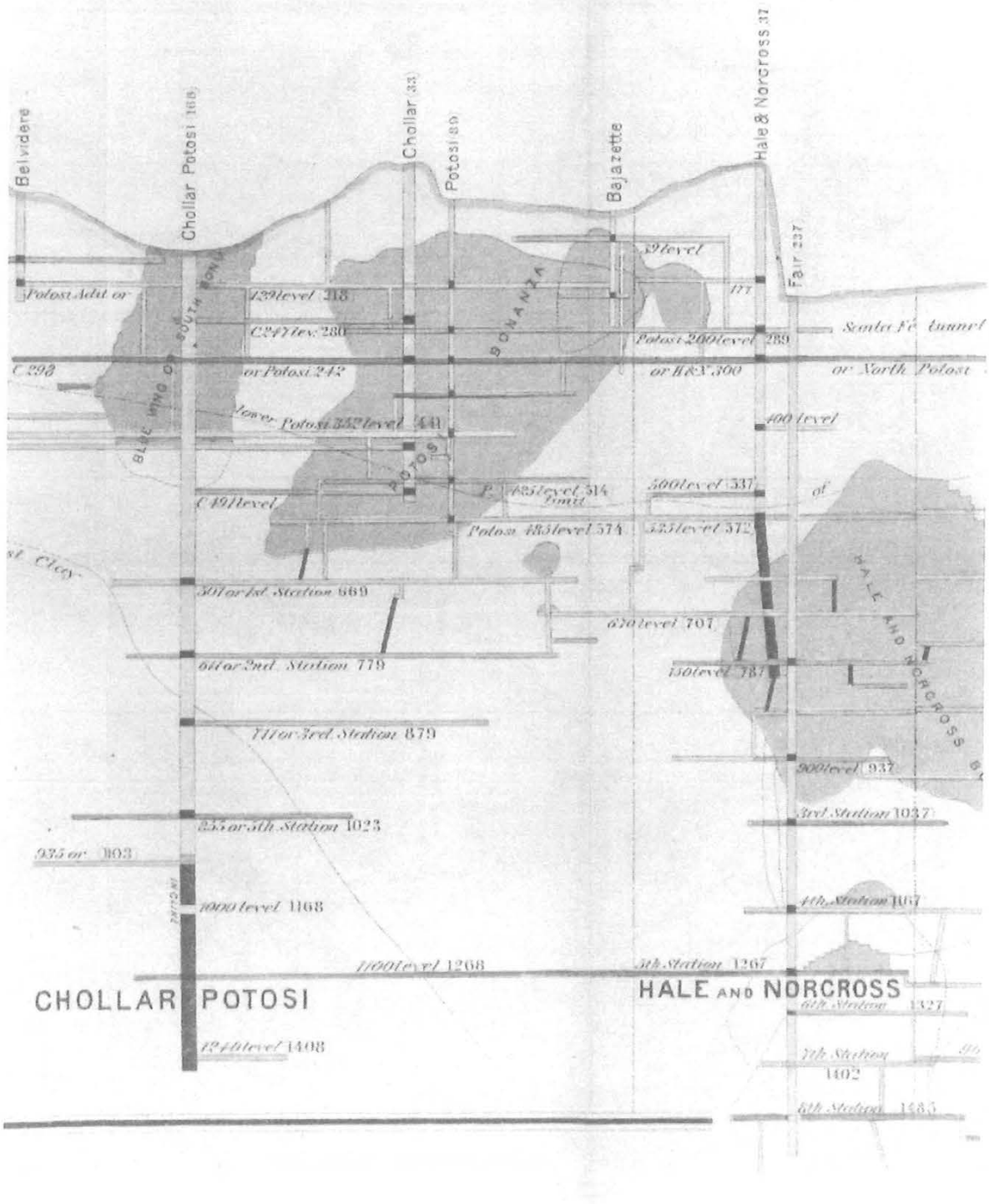
Although we commonly think of maps as the depictions of surface features, mining maps often reveal what is *below* the surface. This is seen in the "Horizontal Map . . ." series done for the Comstock Lode by the U.S. Army Corps of Engineers. Few illustrations better reveal the vertical complexity of mining, for these color–coded maps depict the various mining enterprises from two perspectives—from above and from the side. Because both spatial and elevational information is provided on this map, one gets an idea of the mining activity and ore body in *both* the *horizontal* and *vertical* planes. In some cases, mines prepared three dimensional models—we might call them relief maps—of their properties, with each level in glass so that viewers could see down into the mine, as it were. One such map–model is beautifully described by Mrs. Hugh Brown, while recollecting her experiences in early twentieth century Tonopah:

> On thin glass slides, some of which hung vertically in slender grooves while others lay horizontally on tiny cleats, all the workings of the mine were traced to scale in colored inks. When you stood in front of the model and looked into its serried sections, you seemed to be looking into the earth with a magic eye. Here the shaft dropped down from level to level through ore and country rock; here were "drifts" and "stopes" and "crosscuts" with every foot of ore blocked out; and here you traced the meandering vein, noted where it petered out or widened into richness unimagined as it continued into regions still unexplored.[9]

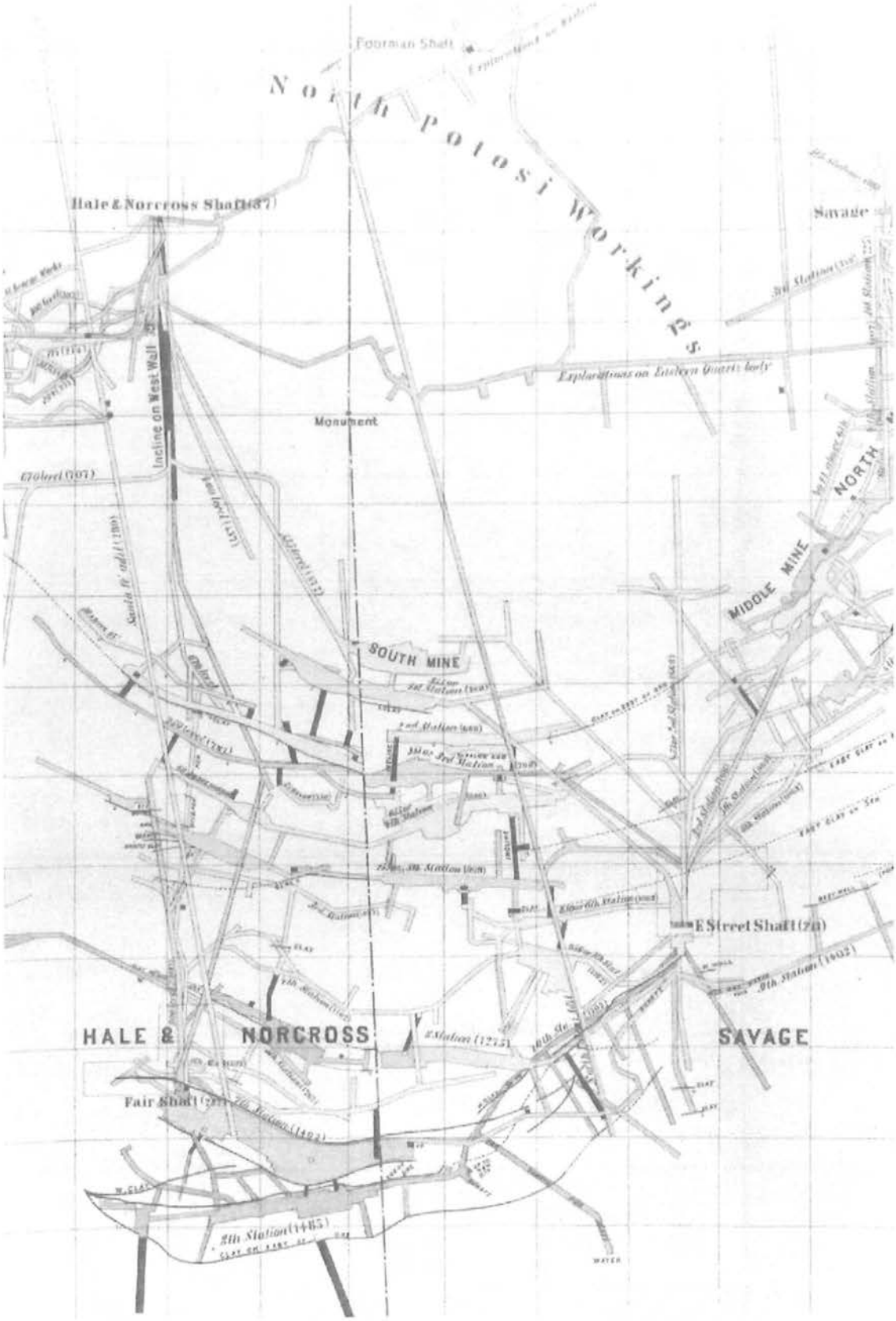
Many similar three–dimensional maps are constructed not of glass slides, but of armatures of metal. Essentially elaborate metal grids, these maps color–code mines and ore bodies so that one can trace the workings of a particular mining property with considerable ease. Fine examples of three–dimensional mine maps can be found at the Central Nevada Museum in Tonopah and at the MacKay School of



Example 5: Horizontal Map and Longitudinal Elevation—Virginia Mine Workings Comstock Lode.



Example 5–detail: Horizontal Map and Longitudinal Elevation Virginia Mine Workings Comstock Lode.

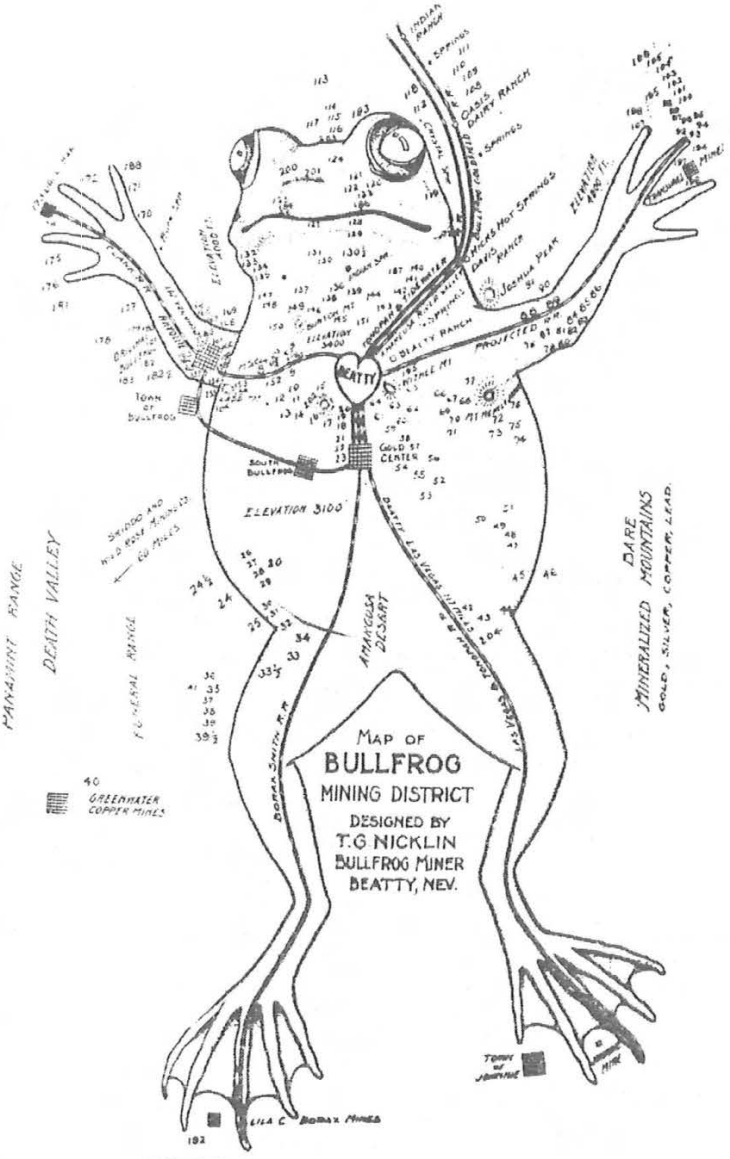


Example 5: - detail (note — no overview or entire map image provided)

Mines at the University of Nevada at Reno. Regardless of their materials of construction, these three–dimensional maps are, in effect, multi–layered relief maps of mines. Like all relief maps, they provide a tangible view of both the horizontal and vertical dimensions of places. These are among the most advanced of maps, technically speaking, and are, in fact, forerunners of the three–dimensional, computer–generated diagrams used in modern medicine, architecture, and (of course) mining operations.

Example 6: The Bullfrog Map

While this and other cartographic fantasies may seem rather whimsical, they remind us that maps serve many purposes. In fact, no discussion of mining–related maps of the Great Basin would be complete without reference to shady mining speculators who used cartography to either stretch the truth or to lie outright. The *Bullfrog Map* of 1906 was an important part of the iconography of Nevada's (and the West's) last great mining boom. This map reminds us of the close relationships between journalism and mining, and between boosterism and mining. Few maps reveal the tendency to hyperbolize better than this now justly famous example, which whimsically translates the name of the district into a memorable caricature. According to one tradition, the origin of the name Bullfrog lies in a description of the local ores as greenish, knobby, and mottled—somewhat like a bullfrog. These characteristics led to the naming of the town and district, and to the creation of the fanciful map show he. So engaging was the name "Bullfrog" that many enterprises in the district used it freely in their advertising and promotion.[10] So it was perhaps inevitable that someone—in this case Mr. Nicklin of the newspaper *Bullfrog Miner*—would give cartographic form to the district's mascot. This whimsical map also reminds us that geographic shapes can be manipulated by creative entrepreneurs; that is, they may be anthropomorphized" or made into brands and logos. Maps, in other words, become an increasingly important element in advertising and promotion as a society becomes more literate and more entrepreneurial.[11]



THE BULLFROG MAP

Example 7:
Tonopah, Nevada, USGS.

While the Bullfrog Map depends on its novelty, this iconic *tour de force* of humor was unusual. Typically, mining districts were represented in a far more prosaic, and more accurate, manner. The federal government had a very strong—one might say sober—role in encouraging mining. It did so by creating an elaborate system of topographic maps, and by publishing reports describing the economic geology of mining areas. The United States Geological Survey mapped most of the mining communities of the West, depicting the Tintic mining district of Utah, and the Tonopah–Goldfield communities of Nevada in considerable detail. These maps showed cultural features such as business districts, schools, and churches; features of infrastructure like railroads and flumes; mine openings; and the topographic features of the ore piles, waste dumps and mill tailings created by mining. USGS topographic maps sometimes accompanied the government reports that described districts in detail—reports that remain one of the best sources of information on historic mining districts during their heyday. In many cases, the maps in these reports also indicate subsurface geology, as they are the product of considerable underground exploration by trained geologists.

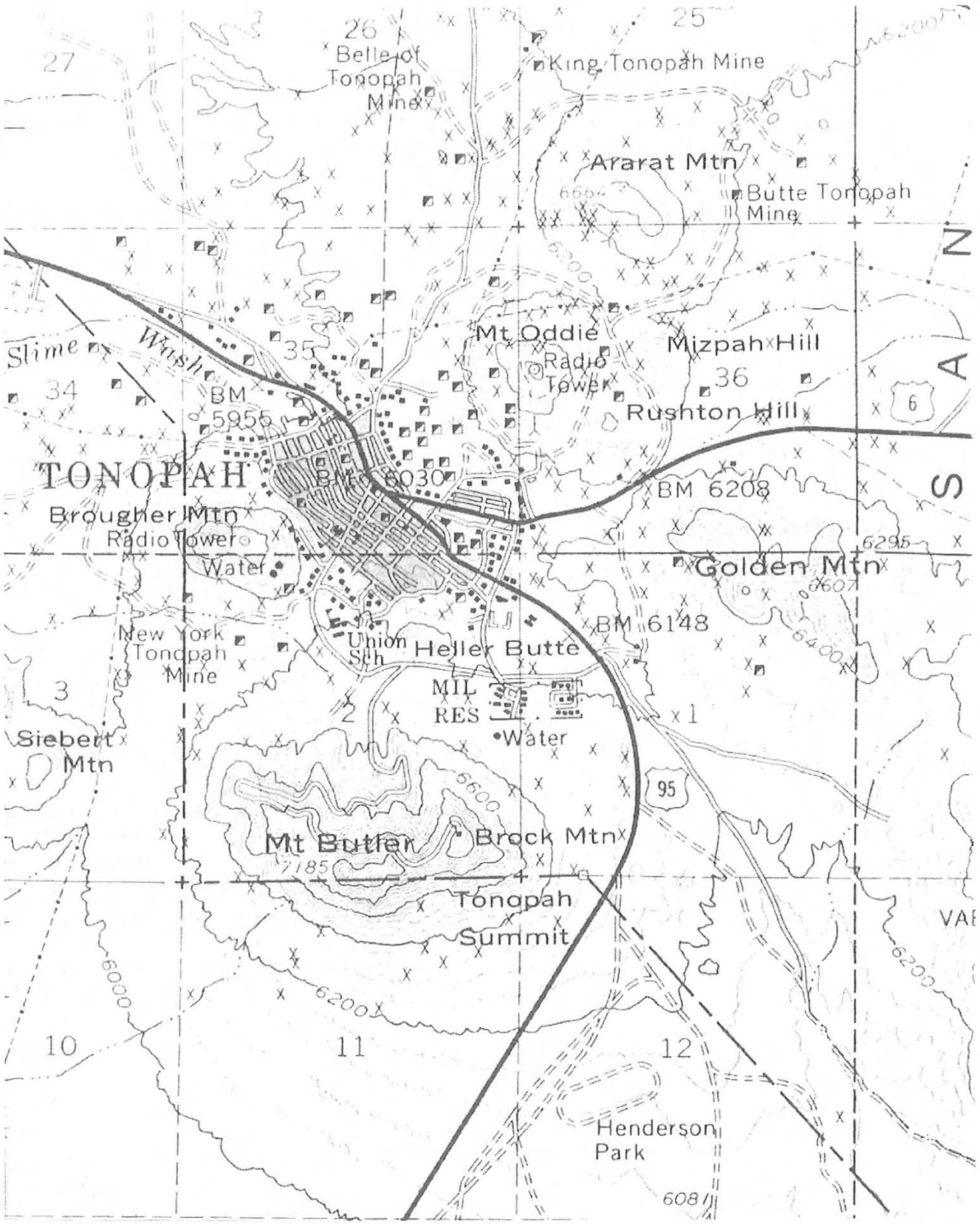
No account of maps in the Great Basin's mining history would be complete without reference to maps in the purely fictional sense, that is, maps of fictional properties. In *Desert Bonanza: The Story of Early Randsburg*, Marcia Rittenhouse Wynn notes that doctor Reginald E. Macdonald ". . . in the very best tradition of lost mines, had originally received from a man in San Bernardino, half of a map purporting to give the location of the lost Peg-Leg." Sometime later, upon receiving the other half of the map, the doctor and an associate set out to search for the mine. Macdonald had a series of adventures as he searched for this (and other) lost mines, but alas and predictably, he never struck it rich.[12]

Naturally, maps also figure in the fictional literature of mining. In the 1931 novel *Gold! Adventure in the Nevada Desert*, author Charles W. Coyle introduces maps as a way to resolve claim disputes. Upon descending into a mine in the vicinity of Goldfield, Nevada, Dan, the novel's protagonist, gets a bright idea that can help his friend Pipp. "He recalled how explorers and war spies would print the image of a locality on their memories, count paces, estimate angles, with the intent of transferring the data subsequently to a reconnaissance map." Because "[h]e was good at mechanical drawing," Dan resolved, "[h]e would make a map!" By so doing, Dan discovers that the miners of the Mohawk Pioneer Mine were looting Pipp's father's mine, the Golden Yucca. As in most such adventures, Dan's resourcefulness is amply rewarded, for he later learns that his father actually owned half interest in ". . . that certain mining claim . . . situate . . . Esmeralda County, State of Nevada . . . Goldfield Mining District . . . and known as *The Golden Yucca*."[13] In reality, of course, maps usually serve mining in rather more prosaic ways; but these fictions of the lost Peg–Leg and the Golden Yucca remind us, if somewhat flamboyantly, that maps are needed both to locate and to determine the extent of mining properties.

Conclusion:

Although mining and mapping seem to be two separate enterprises—the former physical, the latter cerebral—they are interrelated. Mining could not be accomplished without the cartographic depiction of mines, especially in areas like the Great Basin, where mining and initial European–American colonization coincided. Maps are among the most important tools used by mining interests to first identify, and then to claim, work, capitalize, and develop properties. They are also, sadly, among the least appreciated of the tools used by miners.

As suggested at the very beginning of this essay, Emmett L. Arnold was indeed correct when he lamented: "It seems to me that several pages have been lost from mining history . . . ."[14] Unlike the stories that may be lost forever, however, a diligent search may uncover mining–related maps in both private and institutional collections. Rather than being lost, then, these sources are largely *overlooked.*



Example 7: Tonopah, Nevada, USGS.

Aside from original surveying manuals used by those who mapped mining districts, surprisingly little has been written about the process of mapping mining properties, and the individuals—both private and public—who worked so diligently to map mining claims and districts. Their work is part of a rich civil and mining engineering tradition that has been eclipsed by the more engaging processes of prospecting and ore extraction. Nevertheless, their works deserve recognition for several reasons: Mining maps can answer questions—as for example, about locations and juxtapositions—that no other source can answer. They can help us understand disputes and events. And of course, they are intrinsically interesting as representatives of the art and science of mapmaking. I hope that this paper stimulates other mining historians to study both mining–related maps and the fascinating individuals, companies, and institutions who created and marketed them, for in so doing we can recover many more lost pages in mining history.

Notes

1. See John Logan Allen, *North American Exploration, Volume 3, A Continent Comprehended* (Lincoln: University of Nebraska Press, 1997).
2. The Santa Buenaventura river does not exist, but it may have been confused with the Humboldt River, which flows westward across north–central Nevada.
3. See Leonard Arrington, *Great Basin Kingdom: An Economic History of the Latter–day Saints, 1830–1900* (Cambridge: Harvard University Press, 1958).
4. Harlan D. Unrau, *Basin and Range: A History of Great Basin National Park* (Washington: United States Department of the Interior, 1990), 78.
5. Unrau, *Basin and Range*, 89.
6. See, for example, James Underhill, *Mineral Land Surveying* (Denver: The Mining Reporter Publishing Company, 1906); Frederick Winiberg, *Metaliferous Mine Surveying* (London: Mining Publications, Ltd., 1950); and M. H. Haddock, *The Location of Mineral Fields* (Stationers' Hall Court: Crosby Lockwood and Son, 1926).
7. See J. B. Harley, introduction to David Buisseret (ed.), *From Sea Charts to Satellite Images: Interpreting North American History through Maps* (Chicago: University of Chicago Press, 1990).
8. Samuel Bowles, *Our New West: Records of Travel Between the Mississippi River and the Pacific Ocean. Over the Plains—Over the Mountains—Through the Great Interior Basin . . .* (Hartford, Conn.: Hartford Publishing Co., 1869), 295–6.
9. Mrs. Hugh Brown, *Lady in Boomtown: Miners and Manners on the Nevada Frontier* (Palo Alto: American West Publishing, 1968), 28.
10. Richard Lingenfelter, *Death Valley and the Amargosa: A Land of Illusion* (Berkeley: University of California Press, 1986).
11. See Richard Francaviglia, "Cover the Earth: The Role of Maps in Advertising and Promotion," 2000 Virginia Garrett Lectures in History of Cartography, October 6, 2000.
12. Marcia Rittenhouse Wynn, *Desert Bonanza: The Story of Randsburg—Mojave Desert Mining Camp* (Glendale, Calif.: The Arthur Clark Company, 1963), 203–4.
13. Charles W. Coyle, *Gold! Adventure in the Nevada Desert* (Springfield, Mass: Milton Bradley Company, 1931), 154–5, 381.
14. Emmett L. Arnold, *Gold Camp Drifter, 1906–1910* (Reno: University of Nevada Press, 1973), 181.