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Historic Railroads

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Cover: Top, Chicago, Burlington & Quincy workers posed by a railroad car in Cody, Wyoming, 1924, photo courtesy Yellowstone National Park; middle, first passenger train to the Grand Canyon, September 1901, photo courtesy David Rees Collection, see article p.15; bottom, Central Pacific Railroad 4-4-0 locomotive no. 173 built in the Sacramento shops in 1872, see article p. 51.

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Foreword

A map of the United States showing the routes of its current and bygone railroads gives the impression of a large quilt stitched together by the universal symbol of the railroad track. Indeed, this impression is not far from reality. American history is interwoven with and bound to the history of its railroads. It is a history of growth and change, manifest destiny and financial scandals, the desire to improve the quality of life and a reckless disregard for lifeways destroyed. To some it is the epic tale of transcontinental travel reduced from several grueling months overland to several days on the iron trail, the trip perhaps made memorable by stunning scenery, fresh-faced Harvey girls, and glimpses of the sooty workers who made it all possible. To others, it meant cheaper transport of natural resources that once seemed boundless, the scarring of unvalued pristine landscapes, or the desecration of sacred ground. It is also synonymous with the characters who peopled it. Notorious tycoons financed the lines, reveled in competition with their rivals, and, in many cases, have justly taken their place in the gallery of America's greatest scoundrels. At the same time, often nameless immigrants—Irish, Chinese, German, Greek, and others—along with America's Civil War veterans, Mormons, American Indians, and former slaves, made the tycoon's vision real. Over a history at once glorious and shameful but never colorless, railroads have moved soldiers and vacationers, catalog houses and furnishings, commuters and hobos, circus animals and livestock, sugar cane and parlor organs. They attracted and exploited America's newest citizens; misled settlers; created, named and abandoned towns; and brought loved ones home for the holidays. They opened a new world to the many Americans who had never been more than a day's travel from home.

Today, American railroad history is preserved in myriad ways across the land, as scores of federal, state, local and private sites—including more than a dozen units of the National Park System—concern themselves with the subject. This issue of *CRM* highlights some of the most notable ongoing efforts to research, compile, synthesize, analyze, preserve, and interpret the history of railroads in America. From Maine to Florida and across the West, to Alaska and even Hawaii, railroads have touched every part of the nation, for better or for worse. Their presence and impact are always before us.

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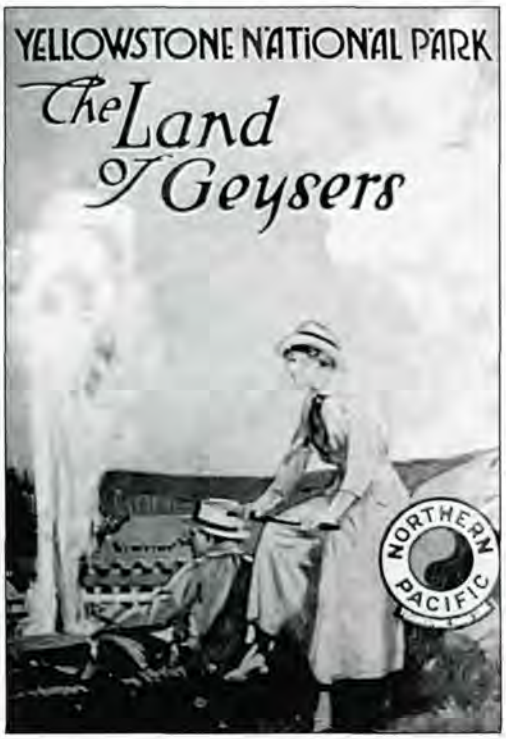
Historic Railroads in the National Park System and Beyond

Railroads and national parks have rolled through history hand in hand since 1883, when the first national park, Yellowstone, was a decade old. In that year, the Northern Pacific Railroad completed a spur line from Livingston to Cinnabar, Montana, near the northern edge of the park. Eventually, four other railroads would bring the "dudes" to the park's other entrances or nearby gateway communities.

The close, often interdependent, relationship between parks and railroads began even before the first train arrived at Cinnabar; indeed, it started before the national park idea had fully taken shape. Agents of the Northern Pacific warmed to the notion of setting Yellowstone aside as a public park, seeing in this historic development a clear opportunity for profit. Once the park was established, the railroad went about promoting and facilitating travel to and through the legendary but little-visited destination. The results of their efforts included fleets of deluxe vehicles and luxurious park lodging, most notably, perhaps, the Old Faithful Inn.



Northern Pacific Railroad promotional booklet courtesy Yellowstone National Park.

This story was repeated, with different casts of characters, at existing and future national park areas throughout the West. And, as in Yellowstone, marketing by railroads would play a key—some would argue overpowering—role in the early history of visitation to the parks. The Great Northern Railway built its main line from the Great Lakes to the Pacific Coast just south of Glacier National Park in 1893. The Great Northern also undertook development of an impressive array of lodging in and near Glacier, including the magnificent Many Glacier Hotel.

Far to the south, the Atchison, Topeka & Santa Fe Railway and its Arizona subsidiary, the Atlantic & Pacific Railroad, Western Division, had just recently emerged from bankruptcy. Nevertheless, an enterprising Arizona businessman proposed a branch line to the Grand Canyon. His efforts paved the way—literally laying much of the track—for the Grand Canyon Railway. Development of the South Rim of the Grand Canyon as a destination resort for tourists quickly followed. The Santa Fe System erected a large, rustic hotel, El Tovar, virtually on the rim; a reproduction of a Hopi Indian pueblo, Hopi House, as a sales outlet for southwestern Indian arts and crafts; and sundry other facilities, roads and trails. Then the railway—through its allied Fred Harvey Company, which operated the tourist facilities—successfully lobbied for the establishment of Grand Canyon National Park.

There were other motives for railroad building that had little to do with tourism. The Southern Pacific Railroad lobbied Congress for the creation in 1890 of Sequoia National Park, but its main goal was to deny the timber in the park to local markets, forcing them to import from railroad timberlands in Oregon over a much longer—and more profitable—haul for the railroad.

That same year, Congress created Yosemite National Park, surrounding the vaunted Yosemite Valley, which had been granted to the State of California for park purposes in 1864. Some years later, the Yosemite Valley Railroad would construct a line from Merced to El Portal (literally, "The Gateway,") a settlement just west of Yosemite's main entrance. The Yosemite Valley Railroad would haul many a trainload of visitors

to the park until torn up for scrap following World War II.

Still other railroad projects came at the urging of the National Park Service itself. A direct request from NPS Director Stephen T. Mather led the Union Pacific Railroad, during the 1920s, to develop tourism to the North Rim of the Grand Canyon, Zion, and several other Utah parks. A Union Pacific subsidiary, the Los Angeles and Salt Lake Railroad, constructed a branch line from Lund to Cedar City, Utah, where its motor coaches collected and hauled tourists to the North Rim, Bryce Canyon and Zion National Parks, and Cedar Breaks National Monument. Another Union Pacific subsidiary, the Utah Parks Company, built lodges, inns, and other facilities at these parks.

Each and every one of these railroads produced, over a period of more than a half century, literally tons of promotional literature. Artistic posters, paintings, folders, brochures, pamphlets, booklets, and even books promoted visits to America's great national parks. Today, such railroad ephemera and art are prized by railroad buffs and national park enthusiasts alike, and comprise some of the more interesting and colorful items in many a National Park Service museum collection.

Chinese coins discovered during archeological excavations in support of stone culvert headwall stabilization at Golden Spike National Historic Site. NPS photo.

The great railroad systems were not the only ones interested in the parks, however; the intermediate regional systems and even short lines jumped on board as well. In Colorado, the narrow gauge Rio Grande Southern Railroad and the Denver & Rio Grande Western promoted and offered tourist rates to Mancos, Colorado, for those wishing to visit the famed Anasazi ruins at nearby Mesa Verde. The Tonopah and Tidewater Railroad ran north to south through the valley east of California's Death Valley, and the narrow gauge Death Valley Railroad actually reached over the Greenwater Range into Death Valley itself. Beginning in 1927, officers of the mining company that owned these railroads, the Pacific Coast Borax Company, began maneuvering to create a Death Valley National Monument. By the time the monument was established in 1933, the company had organized the Death Valley Hotel Company, which constructed the Furnace Creek Inn and converted other facilities to hotels. Eventually, the company converted its old Greenland Ranch, which had raised fodder for the famous 20-mule teams, into the resort now called Furnace Creek Ranch.

Union Pacific Railroad promotional booklet. Courtesy Yellowstone National Park.

The connections between railroads and national park areas can seem limitless. The Alaska Railroad, built by the Department of the Interior itself, crosses Denali National Park, while a ride on the White Pass & Yukon Route enriches the visitor experience at Klondike Gold Rush National Historical Park in Skagway. A Mammoth Cave Railroad once hauled tourists to that underground wonder, and the little Mount Tamalpais and Muir Woods Railway had a branch line down which a "gravity car" traveled into Muir Woods.

Urban and suburban parks have railroad history in abundance as well. Lowell, Massachusetts, had a street railway, which the National Park Service has partially reconstructed for the benefit of visitors to Lowell National Historical Park. The Cuyahoga Valley Scenic Railroad is an important part of the cultural landscape at Cuyahoga Valley National Recreation Area in Ohio. The electric railroad at

Indiana Dunes National Lakeshore and the Presidio Railroad at Golden Gate National Recreation Area in San Francisco are other examples.

Furthermore, quite a number of parks have within them the abandoned grades of railroads dismantled long ago. These include the narrow gauge mining railroad between Searchlight, Nevada, and the Colorado River, in Lake Mead National Recreation Area, and the Hetch Hetchy Railroad (used for dam building) that once penetrated Yosemite.

In recent decades, the National Park Service has acquired several areas that specifically commemorate and preserve railroad history. Golden Spike National Historic Site in Utah preserves the place where, on May 10, 1869, the first transcontinental railroad was completed by the Central Pacific and Union Pacific Railroads. The rich history of the immigrants who built America's railroads is reflected in archeological remains at the site. Immigrants are also key to the story at Allegheny Portage Railroad National Historic Site in Pennsylvania, where the railroad was part of a canal system. Steamtown National Historic Site, also in Pennsylvania, celebrates the era of the steam locomotive on American railroads.

Still other sites deserve consideration by the NPS. The East Broad Top Railroad in southern Pennsylvania, for example, is a wonderfully preserved slice of narrow gauge railroad, complete with locomotives, cars, track, tunnel, bridges, a shop building complete with all its belt-driven machinery, and other structures.

The stories of many of these railroads are covered in the pages of this issue of *CRM*. But the history of railroads in the United States extends beyond the areas protected by the NPS, of course. As this special issue demonstrates, railroads are a thread woven throughout the fabric of American life, and their legacy—be it trains which are still operated, long-abandoned tracks, archeological remains, works of art and architecture, or simply the stories of those who remember the ways they changed lives—lives on all around us.

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Railroads as World Heritage Sites

The World Heritage Convention of 1976 allows the United Nations Educational, Scientific and Cultural Organization (UNESCO) to designate places of outstanding cultural or natural significance around the world as World Heritage Sites. The possibility of designating industrial locations has always been implicit in the Convention but it is only recently that much attention has been given to the task of identifying likely candidates. The International Council on Monuments and Sites (ICOMOS) is responsible for advice on these matters and, in 1997, it commissioned Great Britain's Institute of Railway Studies to recommend guidelines about the kinds of qualities that the World Heritage Committee should look for in railroad sites. The idea is that the criteria should command broad assent globally.

To understand some of the challenges of coming up with such a list we need to grasp something of the complicated nature of railway history. By the standards of most modern industries, railways have unusually deep historical roots. Railways of a kind arguably existed as far back as the sixth century B.C. Certainly by the 15th-century European miners were making extensive use of lines with wooden rails and vehicles. We can date the mechanically worked railroad to the first two decades of 19th-century Britain. British engineers rapidly gained employment across Europe, building many of the continent's earliest and most important lines. By 1907 there were about 200,000 miles of railways there.

The European monopoly on railways was short-lived, though. By the mid-1820s, entrepreneurs in the United States were planning the Baltimore & Ohio Railroad, an enterprise on an entirely new scale. In 1907 there were about 237,000 miles of route in the U.S., making it by far the largest single network of railroads in the world.

One critically important aspect of these developments was their economic impact. In the 19th century, steam railways were the dominant form of inland transport for any but the shortest of journeys. Railways rapidly developed as the largest and most complex examples of sociotechnical systems that the world had known; their political, financial, business and managerial structures later influenced the growth of large-scale corporate business, particularly in the United States. The railways' advantages of speed, capacity and economy made them more than mere instruments of industrial and business development, however. Culturally, their impact was huge.

The railways' influence was not only felt in those countries that industrialized first. By 1907, there were 168,000 miles of railway outside Europe and North America. Most of these railways were part of the spread of European imperialism before World War I. In European-settled parts of the world, most communities desired the coming of railways as the key to prosperity, while every government wanted them for national development. But railways were expensive, and many states fell into financial dependence on the European banks, mortgaging lands and taxes to pay for lines. Nor did contemporaries often draw attention to the social and environmental downside of the technological triumph of the worldwide spread of railways: the exploitation of humans and natural resources to an unprecedented degree.

The "great" or "golden" age of railways was over in most countries by World War I. Certainly by the middle of the 20th century most of the world's railroad network was in place and, on the whole, the story since then has been one of slow decline, at least in terms of route mileage. But development continues on existing routes, and new lines are still built. Although the materials, traction, and principles of management employed almost invariably differ from those of the pioneering railways, the same basic technical principles appear set to take the mechanically worked railway into its third century.

How can we possibly extract from such a complex—and often contested—history a single set of criteria for World Heritage status? Since all heritage is intimately bound up with the creation of collective identities—be these at the local, regional, national or global level—it is clearly impossible to expect an easy answer. But our fundamental assumption is one common to all modern historiography of large-scale technologies: that railways are above all sociotechnical systems in which it is ultimately impossible to separate out "social" and "technical" aspects. A proper appreciation of the significance of any particular railway site will only be gained by seeing it in the round, as both the product of, and an influence on, wider social circumstances. This perspective stands in sharp contrast to that of many rail fans, who too often see locomotion as being all-important while the specialist infrastructure, the social organisation, and the wider historical context of railways' development are given less weight than they deserve.

Working from this sociotechnical perspective, and having due regard for the kinds of criteria that ICOMOS has used in the past with regard to industrial sites, we have come up with the following proposed guidelines:

A Creative Work Indicative of Genius. A similar criterion has long been applied in the informal ranking of railways around the world. It fits well with the long-standing approach to history that seeks to identify "great men." Modern scholarship suggests that the criterion should be interpreted more widely, however. While not wishing to deny the great skills and abilities of individual engineers such as George and Robert Stephenson, scholars tend to stress the co-operative nature of railway building. Perhaps, then, sites should be taken as memorials not only to the engineers ultimately responsible for their design and construction, but also to all those others—many of whom will never be known—who had a hand in bringing them to completion. Should we not also look for genius in the financing and managerial organisation of railways? In this way, sites could come to symbolise the wider societies and cultures that gave them birth.

The Influence of, and on, Innovative Technology. Railway's primary purpose is to provide a transport service for goods or passen-

gers. But technology serves a critical role in all of this, and thus it is proper that the role of innovative technologies should be acknowledged in any set of criteria. The technology of the railway includes its course—the trackbed and associated structures. The transfer of technologies from and to other industries and transport modes should also be borne in mind. But such technical matters always need to be taken in context. Modern historiography of technology typically requires an interdisciplinary approach; social, economic, environmental and political factors, among others, influenced technical change and development on the railways. To exclude history from technology is to miss a vital part of the story.

Outstanding or Typical Example. There is a place for the designation of sites either because they have always been outstanding in some regard or because, although once commonplace or typical, they have become special simply by virtue of their survival. Particular historical events and associations will help with the identification of outstanding locations; originality and authenticity might be factors justifying the designation of railways on the grounds of typicality. Specific structures or locales may also be seen as typical. Something such as a steam locomotive servicing depot which remains complete with all its infrastructure may be worth designating as a symbol both of the technology of the railway and as a place of work. As such places become much rarer, the precise location of survivors becomes less important than the power of what remains on the ground to stand as symbols for what was once commonplace around the world.

Illustrative of Economic or Social Developments. Perhaps this is the principal criterion by which sites should be judged. After all, railways were built to perform a transport function, and this basic function has served many political, social, economic and cultural purposes in addition to fulfilling people's desires to travel and trade. But this very diversity brings its own challenges. The railways' influence on social and economic life has not been the same around the world, a fact that presents us with the problem of identifying just what it is about a particular site that represents a universal experience. The difficulty is made even more complex by the fact that there are many different opinions about the value of what the railways enabled. All this implies that the designation of sites on the basis of this criterion needs to be justified by means of widespread consultation as well as thorough historical studies.

None of these criteria should be taken apart from the others. Since railways are sociotechnical systems, all the criteria ought to be applied to any site nominated for World Heritage status. Of course, individual railways will often be deemed more significant on certain grounds than others. One location might be of great technical significance, another of considerable social or economic value. How then can one weigh the two in the balance? There can be no neat formula: by preferring one railroad site as a World Heritage Site over another we also choose, in some small way, among different ways of understanding our own sense of ourselves.

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For more information, visit the Institute of Railway Studies at <www.york.ac.uk/inst/irs/>.

Kenneth C. Kraft and Lisa A. Kraft

19th- and 20th-Century Potawatomi Culture and the Railroad

The Rails of Change

Cultural anthropologists are often interested in patterns and themes in human thinking; more specifically, the relationship between personality and culture. Although most anthropologists have rejected the discipline's earlier attempts to characterize populations utilizing a few psychological terms,[1] researchers are still interested in dominant themes or values emphasized by a particular culture. Quite often, contradictory values and attitudes are manifest as well.[2] An analysis of the cultural values of the Citizen Potawatomi Nation and its stroll through the political trends in American Indian "management" during the 19th and 20th centuries are the topics of this essay. Special attention is afforded to the railroad companies operating in Kansas and Oklahoma, and the legacy they left with the Citizen Potawatomi Nation.

The Citizen Potawatomi Nation epitomizes the diversity and adaptability of any American Indian group currently residing in the United States. A quick review of tribal history illustrates this point. Actual first contact between Europeans and the Potawatomi was established in 1634 by French trader Jean Nicolet on the western shore of Lake Michigan.[3] At the height of the fur trading era (1700s–1800s), the Potawatomi controlled a tribal estate that encompassed Wisconsin, Michigan, northern Illinois and Indiana, and a portion of Ohio. Control was accomplished through tribal democracy and savvy business skills—personality traits encouraged by the culture. The Potawatomi challenged the Ottawa as "middlemen" for trade in the Green Bay area. Using their entrepreneurial skills, the Potawatomi began to hire their local tribesmen to collect and trap the furs that they once procured themselves. In turn, the middlemen-Potawatomi would sell or trade the furs to the French, thereby expanding their tribal control and tribal estate.

During the Removal Period of the 1830s, the Mission Band of Potawatomi (today known as the Citizen Potawatomi) were forced to leave their new homelands in the Wabash River Valley of Indiana. From Indiana, the Mission Band marched across four states (over 660 miles) to a new reserve in Kansas. Of the 850 Potawatomi people forced to withdraw, more than 40 died along the way during the September-November 1838 exodus.

Until this point in modern Citizen Potawatomi Nation history, the tribe had not been directly influenced by railroad interests but rather by government interests. All that would change when the Potawatomi moved into Kansas and began to encourage entrepreneurship even if it meant a change in traditional culture. For the discussion at hand, it is most profitable to concentrate on the personality traits that were encouraged by Potawatomi culture rather than on blood-degree or the history of intermarriage with French traders.

From 1846 to the 1860s, the Potawatomi were concentrated on a reservation along the Kansas River containing approximately 568,223 acres. While in Kansas, a prior rift between two groups of Potawatomi expanded due to the inevitable culture change associated with their assimilation into the dominant American culture. In 1861, the more acculturated Potawatomi exchanged their communal ownership of reservation lands for individual plots amounting to approximately 28,229 acres while the other group chose to retain a portion (about 77,440 acres) as common property. The remaining portion of the Kansas reserve was to be sold to the Leavenworth, Pawnee and Western Railroad Company.[4] In fact, a provision in the 1867 "Treaty with the Potawatomi" provides for the purchase of the unassigned or surplus lands by another rail company if the original deal did not materialize.[5] This is exactly what occurred, with the Atchison, Topeka and Santa Fe (AT&SF) Railroad Company purchasing the surplus lands at $1 an acre. The railroad was to pay the Secretary of the Interior over a five-year period after posting an initial

bond. The AT&SF later sold these lands at an average price of $4.41 an acre.

To our amazement we discovered that treaties for land acquisitions were often penned by railroad companies who later solicited the local Indian Agents for support.[6] Too late for the Potawatomi, the history of railroad pressure and Indian removal in Kansas was becoming well understood by American Indian strategists; the common pattern being the United States government negotiating treaties which sold tribal lands directly to railroad companies.[7] This alliance coincided with the railroad companies' recent entry into the arena of national politics.[8]

Many of the allotted Potawatomi later sold their lands for individual profit or maintained their ownership and developed entrepreneurial ventures such as blacksmith shops and ferry crossings. A measure of Potawatomi prosperity and hospitality is illustrated by several passages from a dragoon's journal dated 1849. After spending the entire summer eating rations and wild meat the dragoons made contact with Joseph LaFramboise, fourth chief of the Potawatomi, who supplied the men with pig, pumpkin, cabbage and potatoes in abundance. The soldier goes on to describe the Potawatomi as being well-behaved, well-clothed and living comfortably in cabins.[9] Nonetheless, both profiteer and entrepreneur fell destitute during this period of acculturation and assimilation. The complex dichotomy of culture change and entrepreneurship was facing the Citizen Potawatomi head-on.

Eventually the Citizen Potawatomi made arrangements with the United States for a reservation in Indian Territory.[10] Again the Potawatomi, during their direct and indirect intercourse with railroad companies, experienced both prosperity and failure. The Oklahoma experience had less to do with railroad companies purchasing Indian lands and more to do with making or breaking small Indian communities. Many of the early reservation towns missed by the railroad quickly conceded and moved to the nearest railpoint or disappeared altogether.[11] Moreover, railroad promoters demanded that each community served must pay half of the value of the townsite in order to establish a railstop.[12] Despite the influence the railroad routes had on town survival, other reservation towns, named for prominent Potawatomi families such as Trousdale and Burnett, still survive today. In fact, many other towns in the Potawatomi Reservation, such as Harrah, Macomb, and Maud, were established on Potawatomi allotments.

Although actually part of the Kickapoo and Sac and Fox reservations, the town of Shawnee, Oklahoma was quickly becoming a major Potawatomi community at the turn of the century. The townsite immediately emerged following the opening of the Sac and Fox and Potawatomi reservations for non-Indian settlement in September 1891.[13] A group of land speculators, bent on forming a city and making their fortune, established the town along the North Canadian River, the river forming the north-south reservation boundary between the aforementioned tribes. Overall, many tribal citizens believed that railroad construction would help industrialize Indian Territory thereby bringing prosperity.[14] The Choctaw, Oklahoma and Gulf (CO&G) Railroad Company, approved by Congress in 1894, was the first railroad to cross the Potawatomi Reservation. However, in 1904 the line was leased to the Chicago, Rock Island and Pacific (CRI&P) Railway Company for 999 years.[15] The first rail service arrived in Shawnee on July 4, 1895, and the company began building its shops there in 1896. The CO&G Railroad Company was the first of five rail companies to pass through Shawnee toward points beyond. Most of the rail routes headed south, deeper into the Potawatomi reservation where there were few roads.

Once again the Potawatomi, and the non-Indian residents of the Potawatomi Reservation, experienced prosperity and failure at the hand of outside influences. While drafting the state constitution in 1906, delegates from Indian Territory asked for provisions to protect tribal allotments from speculators and grafters. Railroad activity in promoting townsite development and in exploiting mineral and timber resources had long angered the Five Civilized Tribes.[16] Settlers in western Oklahoma were also hostile to railroads because of discriminatory freight rates and schedules. In fact, some political analysts argue that the nine railroads serving the Oklahoma Territorial capital of Guthrie caused the city to lose its bid for the state capital. Guthrie symbolized the railroads' influence in the territory, and many constitutional delegates charged that railroad and business interests would dictate the new constitution.[17]

While some Indians and non-Indians claimed that a vast railroad conspiracy was underway, the more acculturated Potawatomi found jobs in planning and construction of the new railroad routes. Potawatomi tribal member Henry Peltier, an ancestor of one of the authors, served as a railroad "bull" for the CRI&P Railroad Company fol-

lowing statehood in 1907. Bulls were responsible for the safety of newly established routes, Peltier's area being all of the newly established Pottawatomie [*sic*] County, created from a portion of the Potawatomi Reservation. Most of the railroad routes in the Potawatomi Reservation crossed the rivers at well-known crossings and followed old trails such as the Osage Trail and the Arbuckle Wagon Road. Perhaps the one factor that influenced the survival or death of many of the towns in Pottawatomie County was the railroads.

With new towns springing up along the routes, older communities either moved to the new towns or disintegrated. Some reservation towns prospered; the newly established town of Brooksville, for example, received its water supply from a lake constructed by the Santa Fe Railroad Company to serve its engines. Oftentimes, railroad companies avoided communities that they could not force to pay tribute for service. Furthermore, if rail lines did pass nearby an unsolicited town the rail companies refused to stop. In the case of the town of Wanette, the railroad company laid out its own town a mile to the north, eventually luring the residents to the new townsite. Conversely, the town of Pearson became a large activity center when great quantities of freight were unloaded there for use in the Saint Louis, Oklahoma, oil fields to the east. Saint Louis is the only remaining town in the county that has never had a railroad nor recruited the companies. However, according to local residents, Saint Louis never really tried to be a town.[18]

Culture change at the hands of the railway companies and the federal government has been a dominant theme in recent Potawatomi history. Settlement patterns changed on the Potawatomi Reservation due to alterations in the physical and social environment brought on by the railroads. The appearance of trading posts and towns along the rail lines introduced new and clustered resources, thus promoting concentrations of people in these locations. The Potawatomi, like other American Indian groups, were not mystified by the railroad or the magic of its financial operations. Intelligent and well educated, the Potawatomi sought to play the game in hopes of turning an invasion into a boon for American Indian society. Railroads left their legacy on the Potawatomi Reservation and the Potawatomi people and that legacy continues today. The Citizen Potawatomi Nation has prevailed throughout the "rails of change."

Notes

1 Ruth Benedict, *Patterns of Culture.* (Boston: Houghton Mifflin, 1934).

2 Marvin Harris, *Our Kind: Who We Are, Where We Came From, Where We Are Going* (New York: Harper and Row, 1989).

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16 Wayne Morgan and Anne Morgan, *Oklahoma: A History* (New York: W. W. Norton and Company, 1984) 81-88.

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Adrienne B. Anderson and Rick Wilson

The Unheralded Resources of Golden Spike National Historic Site

Golden Spike National Historic Site was established in 1965 at Promontory Summit, Utah, to commemorate completion of the world's first transcontinental railroad and the consequential, far-reaching effects of that act. This is considered to be among the most important events in the nation's history. The park celebrates the May 10, 1869, joining of the rails built by the Central Pacific and Union Pacific railroad companies. However, the paramount historical significance of the completed railroad is its effect upon the American far west, bridging the vast, unknown spaces of the great American desert and uniting east and west. It resulted in decimation of the American bison and changed forever western Native American lifeways. It opened to the world the great western lands of the United States, hastening the establishment of western territories and states.

When most people think of Golden Spike, they envision a railroad spike made of gold or the May 10, 1869 ceremony captured in the famous Andrew J. Russell "Champagne" photograph. Visitors to the park see the *reproduction* locomotives, the Union Pacific's No. 119 and Central Pacific's Jupiter. They participate in the May 10th *re-enactment* ceremony and see *replicas* of the last gold and silver spikes driven into the *replica* last tie of laurel. Most visitors leave the park awed by the locomotives and with some sense of history after seeing the very spot where this most historic event took place. However, they don't often take the opportunity to look beyond the "Last Spike Site" and find the wealth of real, tangible evidence of construction and use of the railroad.

Replicas and symbols aside, Golden Spike National Historic Site is among the very few places where one can see the physical remains of this great, multicultural, cross-country effort. Much has been written about the history of the world's first transcontinental railroad[1] and analyses of its history, economics, technology, politics and political machinations abound.[2] But, in fact, even without this information, the Golden Spike landscape actually tells the story of the final push to complete the railroad. Here are the remains of the infamous "race" and of the construction techniques employed: incomplete cuts, partially-constructed parallel grades, the Union Pacific's "false cut," terminus of the Central Pacific's "10 miles of track laid in one day," workers' campsites, blacksmithing workshops, and telegraph pole remnants.

Park lands contain dramatic evidence of the infamous parallel grades with their partially-complete cuts, fills, ramps for horse-drawn earthmovers, hand-hammered drill marks, size-graded spoils piles, borrow pits, partially-built stone culverts, and abutments for hastily-constructed trestles. The varied remains of construction worker campsites document the range of conditions under which the workers toiled. There are special function areas, such as blacksmith workshops, that mark the sites of various support industries. These are the character-defining landscape features that, because of their integrity and the integrity of their historic setting, tell the story of one of this nation's major technological accomplishments.

Famous "Champagne Photograph," Promontory Summit, Utah, celebrating completion of the first transcontinental railroad. Photo by Andrew J. Russell, May 10, 1869, courtesy the Oakland Museum.

Slaughter House *showing construction worker campsite, east slope of the Promontory Mountains. The infamous Union Pacific "Big Trestle" is in the background. Photo by Andrew J. Russell, 1869, courtesy the Oakland Museum.*

However, tools for understanding these remains are varied. Photographs, taken by "official" railroad photographers during the closing days of construction, document and help explain activities and events for which archeological evidence remains. Railroad records provide information about standardized culvert design, and archeological excavations document that the design was often modified. The illustrations, photographs, and written record, in conjunction with archeological investigations, historic structure investigation, and cultural landscape evaluation are providing new appreciation of the park's many resources and facilitating their effective management. Currently, the park is overseeing a multidisciplinary effort to inventory, document, assess the condition of, and evaluate its many cultural remains.

Management of Historic Structures

Golden Spike National Historic Site contains what probably are the best-preserved and among the most important segments and elements of the original 1,776 miles of railroad line completed between Omaha, Nebraska and Sacramento, California. This grade and its associated features were designated a National Civil Engineering Landmark in 1969. Over 17 original stone box culverts and seven original trestle sites with stepped abutments of earth and dry-laid stone retaining walls remain. Nine wood culverts, including remains of a wooden stave culvert, and two wood trestles that date from subsequent, historic operation of the Promontory Branch Line still exist along the 15-1/2 miles of parallel construction within the park.

Over time, some of the wood culverts have deteriorated to the point of collapse, making the grade no longer usable and cutting short the visitor experience. To facilitate accurate maintenance of these features, a systematic approach to repair has been developed by the park that involves both archeological excavations and historic architectural documentation. Initial, archeological "test" excavations sufficient to enable a historic architect to develop construction drawings for repair of the culvert are carried out. Subsequently, with repair materials on hand, the culvert is completely excavated, new information incorporated into the architectural drawings, and the repairs completed in the most historically accurate manner possible. This effort has resulted in documentation of various episodes of past maintenance by the railroad and dating of these events using artifacts and Southern Pacific Railroad date nails that were sometimes incorporated into the structures. Similarly, stabilization of stone culvert headwalls, also accompanied by archeological excavations, has yielded artifacts of significance to the 1869 completion of the railroad. All resultant information is being incorporated into the park's Historic Structure Report.

Archeological Evidence from 1869

At least 17 campsites established by the numerous workers who built the railroad exist within the boundary of the park, each containing a great variety of features that document individual habitation as well as community areas.[3] Some campsites, such as depicted in Russell's 1869 "Slaughter House" photograph, contain over 50 individual features that range from small sleeping areas dug into the side of a shallow drainage to very large, community structures assumed to be mess tents or storage facilities. The winter and early spring of 1869 were extremely cold and harsh, and winds whipped across the Promontory Mountains. The need for shelter is reflected in the many features nestled in the lee of imposing limestone outcrops and in the rock-walled dugouts excavated into the hillsides. Most structures, whether they are pit features in the open or rock walled lean-tos, retain evidence of stone hearths and chimneys. In addition to group campsites, there are a number of

individual, isolated features, such as leveled tent or wagon platforms and distinct, special activity structures. Russell photographically documents the use of small rock shelters as individual campsites, the remains of which are obvious today.

Most of these archeological sites and features have not been formally documented, have never been addressed in the abundant literature on the transcontinental railroad, and are not well understood. Consequently, the park has implemented a multi-year archeological inventory project, which is part of the National Park Service Systemwide Archeological Inventory Program. The focus of this effort is to investigate and to develop an understanding of the common workers who actually built the railroad.

NPS archeologist Adrienne Anderson inspecting excavation of collapsed, Southern Pacific wooden box culvert in anticipation of its repair. NPS photo courtesy Golden Spike National Historic Site.

Integrity of Place; Cultural Landscape Evaluation

The numerous historic features that dot the park's landscape have left distinctive and remarkable evidence of a historic event: Indentations left by parallel railroad cuts notch the horizon; long-abandoned trestle abutments silhouette against the sky; and the sinuous, parallel grades snake their way toward Promontory Summit. The ongoing cultural landscape evaluation has documented that the integrity of the setting includes not only the expansive views of the 1869 scene but also the numerous, contributing construction features, historic structures, and archeological remains that document the completion of the world's first transcontinental railroad. These are the unheralded resources that, in fact, tell the story of the first transcontinental railroad and demonstrate the physical efforts of thousands of men who toiled to make the railroad a reality.

Notes

1 See Daggett 1922, Dodge 1965, White 1895, and Williams 1988.

2 See Davis 1894, Griswold 1962, Kraus 1969, Lewis 1969, and Trent 1981.

3 Adrienne B. Anderson, "Ancillary Construction on Promontory Summit, Utah: Those Domestic Structures Built by Railroad Workers," *Forgotten Places and Things,* Center for Anthropological Research, Contribution 3 (1981).

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Gordon Chappell

A Grand Canyon Railway

Project for a New Century–the 20th

The century was about to end. No, it was not 1999, rather 1899, and the talk of the northern Arizona Territory was a railroad then under construction to the Grand Canyon. It bore the name "Santa Fe and Grand Canyon Railroad" because its purpose was to connect the Santa Fe Pacific Railroad (a subsidiary of the Atchison, Topeka & Santa Fe (AT&SF) Railway), at Williams, Arizona, with the South Rim of the Grand Canyon, roughly 63 miles by the route of the survey to the north. It was typical for a railroad in that era to adopt as its name the names of each end of its line.

This was not the first time there had been talk of a railway penetrating the Grand Canyon country. Some years earlier, Robert Brewster Stanton and his survey party took boats the length of the Colorado River in the Grand Canyon to lay out his proposed Denver, Colorado Canyon and Pacific Railroad, but that line through the bottom of the canyon never got off the drawing boards. It would have been feasible, given enough time and treasure, to build a railroad through the canyon, but no cities, towns, mines, industries, or sources of passenger traffic existed along the bottom of the canyon to offer such a railroad freight and passengers. So, what may have been feasible from an engineering standpoint (although at great cost) was not practical from a financial standpoint. No railroad ever would run the length of the bottom of the Grand Canyon.

In the winter of 1913, a double-headed passenger train approaches the depot at Grand Canyon, Arizona.

Hauling tourists to the South Rim of the canyon seemed an entirely different proposition. By the mid-1890s, financial interests in Flagstaff, northern Arizona's principal city, proposed a Flagstaff and Grand Canyon Railroad and a destination health resort "spa" on the rim of the canyon, to be built and operated by the railroad. But that proposal, too, lapsed in the depression of the mid-1890s.

In 1897, a Prescott, Arizona, citizen named William Owen "Bucky" O'Neill proposed building a railroad from Williams, a town some distance west of Flagstaff on the Santa Fe Pacific, to the Grand Canyon. At first, he had tried to interest the Santa Fe System in building such a branch, which, based on 10 years of intermittent prospecting in the canyon, he thought shipments of mineral ore—especially copper—would support. But both the AT&SF and the Santa Fe Pacific had just emerged from bankruptcy, and their boards of directors proved conservative and reluctant to invest in any branch lines. O'Neill finally interested a Chicago investment firm, Lombard, Goode & Company, in building the railroad, and it set up the Tusayan Development Company to handle the actual construction of the railroad and development of the copper mines (which, as it turned out, contained very rich copper but very little of it). Between 1897 and mid-1900, the company completed track to within about eight miles of the projected destination along the rim of the canyon before ending up in bankruptcy court. Over the objections of its president, who wanted nothing to do with this Santa Fe & Grand Canyon Railroad (SF&GCRR), the Santa Fe System board of directors had advanced the venture a lot of second-hand rail for which it had not been paid. Then, in 1901, when the bankruptcy court put

the SF&GCRR up for sale, the Santa Fe System bought it as the only way to recoup the cost of the 56 track miles of rail they had advanced the line. Then, the Santa Fe System went on to complete the SF&GCRR to the rim in mid-September 1901, and reorganized it as a nearly wholly owned subsidiary, the Grand Canyon Railway.

At the rim, in what the railroad called "Grand Canyon Station" and eventually simply "Grand Canyon" (now Grand Canyon Village), the railroad had acquired the old Bright Angel Hotel. But, needing a more upscale hostelry, it constructed between 1902 and January 1905, a large, rustic log destination resort hotel called El Tovar. The company had intended to convert the old Bright Angel into employee quarters. But, with access by rail available, passenger traffic to the Grand Canyon escalated so fast that the company needed a resort for less wealthy tourists to complement El Tovar. It converted the Bright Angel Hotel into Bright Angel Camp, a lower-cost tourist facility at the rim, and constructed new employee quarters elsewhere.

Then the railway began to promote travel to the Grand Canyon. The Santa Fe System actually had begun doing so in 1891, publishing a little booklet that year and the next called "The Grand Cañon of the Colorado River." Bankruptcy interrupted its publication, which did not resume until 1897. It then continued each year, with a change in title to "The Grand Cañon of Arizona," through 1901. Beginning in 1902, after acquisition and completion of the line, the railway put out a much more impressive book on the Grand Canyon, available at first in both hard and soft cover, and reprinted in 1906 and 1909 in paperback editions. Beginning also in 1902, the railway published each year—sometimes with multiple printings—a smaller pamphlet called "Titan of Chasms," which continued until interrupted by World War I. (The railroad also issued an order in 1902 changing the spelling from the Spanish "cañon" to "canyon" in all publications and documents.) In later years, it published a pamphlet called "Grand Canyon Outings" which, between the two world wars, superseded "Titan of Chasms."

The Fred Harvey Company had been allied with the Santa Fe System for years, operating depot lunch rooms and hotels and, later, dining cars on the Santa Fe, and giving that railroad a reputation for the best food service and hostelries along any railroad in the United States. Beginning with the opening of El Tovar in January 1905, the Fred Harvey firm took over operation of the company's hotels, lodges, souvenir shops, and restaurants at the Grand Canyon. The railroad owned and maintained all the buildings and structures; the Fred Harvey firm operated them. But while the railroad itself published the booklet on El Tovar annually from 1905 until World War I, the Fred Harvey firm began to issue its own parallel series of promotional publications on the Grand Canyon. One such publication, "Trails, Drives and Saddle Horses," was soon retitled "Trails and Automobile Drives," as motor vehicles made their appearance on the roads around the Grand Canyon.

But it was the railway that, in 1914, constructed the West Rim Drive. Around the same time, it improved and extended existing roads stretching east to Grand View and ultimately to "Painted Desert View," then ran tours along both rims in coaches or buggies and later motor buses, and rented horses to groups staying at El Tovar.

By the time of American entry into World War I, the railway had developed Grand Canyon as a destination resort to replace its failed destination resort in New Mexico, the Montezuma Hotel (briefly renamed the Phoenix having been rebuilt after one of two major fires), at Las Vegas Hot Springs. By then, Fred Harvey, if not the Santa Fe System, had begun to think in terms of turning the Grand Canyon into a national park, and, in 1919, succeeded in getting Congress and the president to create Grand Canyon National Park. The railroad had already been in place for 18 years, and its design for the development at Grand Canyon Station formed a core around which the National Park Service has had to plan, including in the General Management Plan now in progress.

For, in the century since its inception, the railroad itself, its tracks, its hotels and lodges, its employee quarters, its mule barns, its tourist rest stops and souvenir shops, its Phantom Ranch at the bottom of the Canyon, even its powerhouse and laundry building, have all become historic. A number of the buildings are National Historic Landmarks due to their distinguished rustic architecture, which set a model that inspired the National Park Service's own rustic designs.

After World War II, the automobile and interstate highways cut so far into railroad pas-

Grand Canyon depot, April 1915. Courtesy Interstate Commerce Commission.

senger traffic that it became a losing proposition for the company. Finally, in 1968, the AT&SF, which had absorbed the Grand Canyon Railway in the 1920s, discontinued the passenger train to the Grand Canyon. For a few more years, the railway operated freight trains, making a modest profit on the long haul of uranium ore from the Orphan Mine to Cañon City, Colorado. The company ran its last train to the rim, a work train, in the summer of 1974. The tracks lay idle from 1974 until 1989, and several miles of track were even dismantled and removed.

But, beginning about 1984, one of several efforts to purchase and revive the railway, the one commenced by the firm Railroad Resources of Phoenix with financial backing from Max Biegert, started to make some progress. Railroad Resources ultimately failed, but its principal investor, Biegert, took on the project himself. The company acquired three steam locomotives that had historically operated on the Lake Superior and Ishpeming (LS&I) Railroad near the Great Lakes. In the summer of 1989, a second "Grand Canyon Railway" company, resurrecting the name of the Santa Fe System's original subsidiary, undertook repair of 64 miles of tracks, and clear-cut the trees which had grown like weeds in the passenger yard at Grand Canyon, damaging the tracks and platforms. It rebuilt LS&I Locomotive No. 18, and reconditioned "Harriman"-style turtle-back-roofed commuter coaches built for the Southern Pacific to operate on the peninsula south of San Francisco early in the century.

Painted a most-appropriate Pullman olive green with gold lettering—calling forth memories of Santa Fe "heavyweight" passenger cars of the years between the world wars and before the introduction of the later, stainless steel "streamlined" trains—these cars would make, behind a steam locomotive, an attractive train that evoked memories of historic railroading in the United States. The new Grand Canyon Railway scheduled its first train to operate on September 17, 1989, the 88th anniversary of the first train to reach Grand Canyon.

Since that time, the second Grand Canyon Railway has been a roaring success. The company put a second, and eventually a third steam locomotive into service, as well as several diesel-electric locomotives. For awhile it operated a wonderful heavyweight Pullman green parlor lounge car, leased from the Keokuk Junction Railway, on the end of its trains. Perhaps most astonishing, it has accommodated modern passenger specials of the AT&SF (renamed the Burlington Northern & Santa Fe Railway in 1996), pulled by the latest of diesel-electric motive power and featuring streamlined, stainless steel cars which the railway had saved for use by its board of directors and for other special purposes once it sold the rest of its passenger rolling stock to Amtrak. Even Amtrak has run a special train to the rim on this resurrected Grand Canyon Railway.

Thus, the railway to Grand Canyon, which played a role in the establishment of Grand Canyon National Park itself, has reached the 100th anniversary of the beginning of its construction and, within two years, will reach the 100th anniversary of its completion. The railroads that served some national parks, such as Yosemite, have been long abandoned and dismantled, but the Grand Canyon's historic railroad has survived and been resurrected to full operation. May it run for another century!

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Susan Kraft

Through "the Greatest Gateway to the Greatest Park"

Dudes on the Rails to Yellowstone

"To-day I am in the Yellowstone Park, and I wish I were dead," wrote a young and melodramatic Rudyard Kipling in 1889. "The train halted at Cinnabar station, and we were decanted, a howling crowd of us, into stages, variously horsed, for the eight-mile drive to the first spectacle of the Park...."[1] The young India-born Englishman was not yet famous for his words, but he nonetheless penned a memorable account of an early trip to Yellowstone, beginning with his arrival on a train. It was the fourth of July and Kipling had detrained a few miles from Gardiner, Montana, outside the north entrance to Yellowstone National Park, with throngs of flag-waving American "trippers." The 25-year-old Kipling went on to describe a buggy ride through the park with two "old people," including a husband who lamented the "dreffel waste of steam power" represented by the park's geysers while his wife announced that she now had proof of hell to take home to an acquaintance who enjoyed dancing.[2]

The vessel from which Kipling had been "decanted" for his hellish trip through paradise was a train on the Yellowstone Park Line of the Northern Pacific Railway, the first railroad to reach the edge of Yellowstone. This feat was perhaps the culmination of an intimate relationship, dating back to 1871, between Northern Pacific (NP) and land that would become Yellowstone National Park. Behind the belief that an area of such mystery and curiosity should be set aside for all to enjoy were some simple business goals. According to A. B. Nettleton, office manager to a Northern Pacific promoter, one William Darrah Kelley suggested having Congress "pass a bill reserving the Great Geyser Basin as a public park forever...."[3] Kelley was himself a member of Congress and a NP investor. Others associated with NP would quickly join him in his thinking, seeing the potential for profit in delivering tourists to the door of (if not directly into) this unusual area of growing renown. The "Wonderland of the World," as NP General Passenger Agent Charles S. Fee would soon describe it,[4] was big business.

By the time of Kipling's visit, Northern Pacific had been delivering Yellowstone-bound passengers to Cinnabar, Montana, several miles from the park border, for six years. By 1903, the railroad had worked through the litigation that had prevented it from taking passengers to the park's northern doorstep, Gardiner, Montana. When President Theodore Roosevelt visited Yellowstone early in the season in 1903, however, his train, including his own railway car, halted on a siding, as the new tracks were not yet ready for use. The rustic NP depot in Gardiner was in place, however, and would soon be joined by the edifice of which Roosevelt laid the cornerstone during his visit. The Roosevelt Arch, completed by the Army Corps of Engineers, represented an attempt to spruce up Gardiner, a town in which, not long before, most residents had lived in tents.[5] Other schemes aimed at beautification included a pond just outside the arch. The railroad even considered fashioning the pond in the shape of its logo, the monad, and stocking one

Postcard showing Northern Pacific train, depot, and pond in Gardiner, Montana, with the Roosevelt Arch at back. Courtesy Yellowstone National Park.

color of fish on the "yin" side and another on the "yang."

The NP branch line to Yellowstone stemmed south from Livingston, Montana. In an 1887 letter to her aunt in Dexter, Iowa, visitor Hattie Shober paused from her account of "purloin[ing] a few specimens" from the park when the "guards" were not looking to describe her ride on the branch line. The train cut through Paradise Valley, later creating a comparison in her mind between the sights en route to the park and the park itself. With impressive views of the Yellowstone River, a smorgasbord of geological features, snow-tipped mountains, and a variety of wildlife, Paradise Valley earned its name. Shober, for one, could not help but note: "[J]ust think of that we were in Paradise, but left it to visit a portion of his Satanic majesty's domain...."[6] Although Shober found a different "hell" than Kipling, place names like Devil's Thumb, Devil's Elbow and Devil's Kitchenette demonstrate that she was not alone in comparing the park to the underworld.

Early in Yellowstone history, visitors like Kipling were judged to be "dudes" by the park's concessions employees, while Shober might have been branded a "dudette" or "dudine." Wives of dudes might be saddled with the remarkably unfortunate title "dude heaver." (In the parlance of park concessions employees, a "heaver" was a waitress.)[7] Dudes were well-to-do individuals who could afford the cost of an extended package tour and who possessed ample leisure time. They arrived by train, were ferried around the park on five- or six-day tours in comfortable stagecoaches and buggies (and later in top-of-the-line buses or touring cars), and stayed in hotels built and owned by concerns backed by the railroads. The cavernous lobby of one such hostelry, the Old Faithful Inn, might have subtly reminded the observant dude of trestles or other railroad architecture. Small wonder; the inn's architect, Robert C. Reamer, worked for Northern Pacific.

The north entrance, serviced by Northern Pacific and used by Yellowstone's first dudes, was, of course, not the only way into the park. Then, as now, Yellowstone had many entrances, and the potential for profit to be made by delivering visitors to or near those other entrances was not lost on other railroad companies.

In 1901, the first train operated by the Burlington Railroad arrived in Cody, Wyoming, 50 miles east of Yellowstone. However, the road needed to make Cody the park's eastern gateway and bring the dudes to Yellowstone wasn't completed until several years later. In 1924, members of the Cody family were photographed in front of the railroad's Burlington Inn. Probably in town for the dedication or grand opening of the inn, they were relatives of William F. "Buffalo Bill" Cody, the force behind the spur line that now brought the Chicago, Burlington & Quincy Railroad to the town that took his name.

However, before the east entrance road was ready for use, the Oregon Short Line, a subsidiary of the Union Pacific Railroad, reached Yellowstone's west entrance, just over the Wyoming border in Montana, in November 1907. The following June, the first passenger train arrived on the new branch line, and a Union Pacific employee took "'3 dudes' to Old Faithful and back."[8] From this modest beginning, the west entrance gateway community known as Riverside would grow into bustling West Yellowstone, Montana, and, by 1923, Union Pacific would claim, in its corporate magazine, that "[t]hrough this entrance over 50 per cent of all park travel goes" and that, in the past year "[t]he Union Pacific System carried more passengers [to and from Yellowstone] than all other lines combined." The author of the article added, "auto travel during the past year going through the West Yellowstone entrance was almost two to one greater than through any other entrance into the park...."[9]

Acceptance of the apparent inevitability of the rise in auto tourism did not come easy to the railroads, on the whole. Until the late 1920s and early 1930s, the railroads went on as before, with the assumption that passenger service would continue indefinitely.[10] In fact, two railroads that threw their hats into the Yellowstone tourism ring did so only after the automobile was a common site on Yellowstone roads.

In a 1925 brochure, the Chicago and North Western (C&NW) Railway advertised an "ENTIRELY NEW ROUTE to YELLOWSTONE PARK via Lander—The Southern Entrance." Lander, Wyoming, 150 miles southeast of Yellowstone, is one of the most far-flung towns to consider itself a gateway to the park. The 1925 brochure featured an American Indian in a war bonnet on the cover, and romanticized the long journey visitors would make "[t]hrough valleys and over plains [r]ich in Indian lore and traditions" in a "high-powered motor stage" to

Photo from Union Pacific Railroad program advertising the opening of Yellowstone's west entrance for the 1928 season. Courtesy Yellowstone National Park.

Yellowstone. Also included was the combination warning and slogan: "Costs a little more, but worth it."[11] Indeed, rates for the 1926 season reveal that, while the "American plan tour" that involved either entering or exiting via Lander cost $86.00, including lodging, tours from Gardiner, West Yellowstone or Cody cost only $54.00, including lodging and meals.[12]

Another, somewhat closer, gateway to Yellowstone was southwest of Bozeman, Montana and about 40 miles from the park. In 1926, the Chicago, Milwaukee & St. Paul Railway began delivering Yellowstone-bound passengers to Salesville (soon to be renamed Gallatin Gateway), Montana. Aware of the competition it faced from the other railroads and other park entrances, the Milwaukee Road boasted "the only electrified transcontinental main line," promising "freedom from soot and cinders." An early brochure also pointed out that Gallatin was the only park gateway "offering a Regular Park Tour from a main line transcontinental railroad station—Three Forks [Montana]" with "no branch line travel," and proclaimed the terminus "The Greatest Gateway to the Greatest National Park!"[13] In 1927, the Milwaukee Road opened a stately hotel of "semi-Spanish design," the Gallatin Gateway Inn, describing it as "the richest achievement that the hand of Man has contributed to this Wonderland."[14] Standard park buses (or, by special arrangement, Lincoln touring cars[15]) picked up dudes nicknamed "Gallagaters"[16] for four-day tours beginning in the scenic Gallatin River Canyon and ending in Gardiner or Cody.[17] The last railroad to begin providing service to a Yellowstone gateway community, the Milwaukee Road was also one of the last railroads to continue passenger service for Yellowstone-bound visitors, discontinuing service only in 1961.

But, years before Chicago & North Western abandoned its line to Lander in 1972,[18] before Union Pacific ended passenger service to West Yellowstone in 1960;[19] before Burlington stopped servicing Cody in 1956, and before Northern Pacific ran its last passenger train to Gardiner in 1948,[20] the golden age of the dude had come and gone. After World War II it was clear, even to the railroads, that the automobilist was not only in Yellowstone to stay, but represented an ever-increasing percentage of park visitors. Even before the war began, motorists were outnumbering rail passengers by more than 12 to one at the West Entrance.[21] And the world of the dude and that of the motorist had little in common. While the dude felt comfortable in lavish hotels, expected to change for dinner, and often selected a structured tour package, the automobilist wanted to feel comfortable and to set his own schedule, and often couldn't afford an extended vacation. But gradually, in Yellowstone, the motorist has taken over the dude's world, to the point where dress is casual in even the finest of park hotels and dining rooms, few Americans travel to the park on package tours, and scores of cars squeeze into areas that once had to accommodate only a modest caravan of stagecoaches or buses.

But the dude survives. In letters; in historic photos showing him carrying snowballs in his stagecoach in July; in the survivors among those great edifices designed to attract him—the Roosevelt Arch, the Old Faithful and Gallatin Gateway Inns, and others; in enticing railroad brochures assuring prospective female travelers that "[f]ully 60 percent of the Park visitors are women and a large percentage of them travel unescorted";[22] and in the memories and stories of those park employees who protected, educated, cared for, and entertained those visitors whose experience in Yellowstone began with a train ride, the dude lives, and will always be a part of Yellowstone.

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Dale Martin

Livingston
A Railroad Town and its Depot

In the late-19th and early-20th centuries, railways dominated inland transportation and employed between one and two percent of the United States population. Railroads were the economic impetus for hundreds of division point towns, located along main lines at intervals usually between 100 and 150 miles. In these communities, railroads were a pervasive presence with their extensive properties, large work forces, and around-the-clock activity, focused around passenger stations. The depot in Livingston, Montana symbolizes the town's history as a major railroad town and gateway to Yellowstone National Park.

The Northern Pacific Railroad (NP) completed its main line from Minnesota to Puget Sound in 1883. After following the Yellowstone River westward for 340 miles, the NP's route diverged from the waters to ascend its first mountain barrier, the Belt Range. Between river and mountain, in 1882, the company platted the townsite of Livingston and laid out a division terminal: switchyard, roundhouse and repair shops; fuel and water structures; and passenger station with administrative offices. Livingston also became the operating base for several branches: the important line to the north edge of Yellowstone National Park, the Cokedale spur west of town, and the Shields River branch to Wilsall, Montana. Helper locomotives assisted westbound trains up to Bozeman Pass tunnel, 13 miles away and 1,050 feet higher. Livingston grew quickly and was, by 1890, the sixth largest town in Montana. After the NP's financial recovery from bankruptcy in the mid-1890s, growing traffic encouraged the company to build another passenger station in Livingston.

The new depot reflected Livingston's importance to the Northern Pacific. The St. Paul architectural firm of Charles A. Reed and Allen H. Stem designed the buildings in the Italianate

Yellowstone-bound train at the Livingston Depot, c. 1904. Photo courtesy the Warren R. McGee Collection.

style. Reed and Stem designed many depots used by the NP, including Union Stations in Seattle, Tacoma, and Butte, Montana. While they won the design competition for the Grand Central terminal in New York City, professional rivalries and Reed's death pushed their plans aside.[1] The Livingston depot's main block had two stories and a mezzanine. Waiting rooms and the ticket office occupied the ground floor and mezzanines, and the Montana Division headquarters were upstairs. A one-story satellite building on the east was a lunchroom open all hours, and a similar building on the west housed express and baggage rooms. A roofed colonnade linked all three structures. The buildings' exteriors featured red common brick framed within pilasters and trim of yellow-brown pressed brick, with beige terra cotta ornamentation and pillow-like portrayals of the red and black monad, NP's recently adopted corporate emblem. The station was completed in the summer of 1902 at a cost of just over $100,000.[2] Every day during the next 30 years, up to 16 trains stopped at the depot.

By most measures, railroads in the U.S. reached their peak in the mid-1910s. In Livingston, the approximately 1,000 railroaders comprised one-sixth of the town's population. On the north side of town, the machinists, blacksmiths, boilermakers, and car repairers worked in NP's largest repair facilities between Minnesota and Puget Sound. In the station on the top floor, divisional supervisors, train dispatchers, telegraphers, and clerks oversaw operations from Billings, Montana on the east to Helena and Butte on the west. At train times, the platforms swarmed with crews, workers tending locomotives and cars, and station staff; carts stacked with baggage, express, and mail; and passengers sampling the mountain air. Six to eight daily main line passenger trains ran through Livingston, trains with names like the North Coast Limited, the Twin City Express, the Mississippi Valley Limited, and the Atlantic Express. These trains carried cars to Minneapolis, St. Paul, Milwaukee, Chicago, Omaha, Kansas City, St. Louis, Denver, Seattle, Tacoma, and Portland.

Gardiner, the north entrance to Yellowstone National Park, was 54 rail miles from Livingston. From 1883 until 1908, the NP was the only railway to reach Yellowstone, a fact that the company made an integral part of its corporate identity and promotion. NP's monad emblem had "YELLOWSTONE PARK LINE" on its bottom edge from the mid-1890s until 1953. In advertisements, brochures, timetables, and the annual publication *Wonderland*, the NP emphasized Yellowstone National Park and its own importance in getting people there. Every summer, trains left Livingston for Gardiner with coaches, sleeping cars from distant cities, and, at the end, an open-sided observation car called the "rubber-neck car" by train crews.

The long American railway decline began after World War I. The rise of road transport and laborsaving rail technologies resulted in permanent cuts in operations and employment. The Great Depression accelerated changes. In 1932, the Northern Pacific abolished the division headquarters in the Livingston depot, dividing its responsibilities between offices in Glendive and Missoula, Montana. Main line passenger service fell in 1932 to the four daily trains that operated until 1971. The NP expanded the Livingston shops for new diesel-electric locomotives in the 1940s and 1950s and then, as the displaced steam engines were retired, demolished the 44-stall roundhouse. After World War II, the Northern Pacific stopped regular passenger service to its trademark destination. Daily summer trains to the edge of Yellowstone National Park ceased after the 1948 season, replaced by busses. Rare chartered passenger trains ran to Gardiner until 1955.

Livingston's position as a railroad town faded in the 1970s. In 1970, the Burlington Northern Railroad (BN) absorbed the Northern Pacific, moving Livingston in corporate rail geography. Located for almost 90 years near the center of NP's main line, Livingston found itself on a peripheral secondary line in the larger BN system. Amtrak took over most passenger trains in the U.S. in 1971, reduced service through Livingston to just six trains per week, and ended service in October 1979. BN ceased freight service to Gardiner in 1975 and dismantled the south end of the Yellowstone branch. The last BN workers vacated the Livingston station in 1982. After BN employment at Livingston reached a peak of 1,150 in the late 1970s, work at the locomotive shops declined until their closure in May 1986. Montana Rail Link began operations over Burlington Northern's former NP main line across southern Montana in October 1987, and moved the Livingston train crew base to Laurel, 100 miles to the east. One positive development, in June 1988, was the Livingston Rebuild Center's reopening of the shops to overhaul locomotives and freight cars.

As Livingston experienced rail decline, the community considered the acquisition of the former passenger station. In 1982, Burlington Northern announced its decision to donate the station to Livingston. Within several years, the Livingston Depot Foundation leased the station buildings from the city and arranged a five-year contract to serve as a summer-season satellite museum of the Buffalo Bill Historical Center, in Cody, Wyoming. The extensive renovation, requiring over $700,000 of government grants, local contributions, and BN money, included the reversal of mid-century alterations, strengthening the structure to current seismic requirements, and adapting it for museum use. The Livingston Depot Center was formally dedicated on July 1, 1987. The following year, the Advisory Council on Historic Preservation and the U.S. Department of the Interior awarded the center a National Historic Preservation Award for the accuracy and quality of restoration.

The museum ended its affiliation with the Buffalo Bill Historical Center in the early 1990s and became an independent railroad museum. Every summer since 1993, the depot has housed "Rails Across the Rockies: A Century of People and Places," combining artifacts, photographs from retired conductor Warren McGee and Montana Historical Society collections, and an HO-scale diorama of Livingston's shops, yard, and depot. A variety of accompanying exhibits has also been mounted. In addition, the Depot Center hosts arts and crafts sales, an annual railroadiana swap meet, and blues concerts.

The Livingston Depot Center sits in an active railway setting. The east satellite building still is a cafe. On the north side of the Depot Center, Montana Rail Link's mountain railway hosts freight trains, helper locomotives, and yard switching. Occasional summer tour passenger trains pause by the depot. Across the switchyard, a 176-foot tall brick smokestack dominates the Livingston Rebuild Center shops. Although Livingston's economy is now largely dependent upon automobile-based tourism and outdoor recreation, the town's railway heritage remains alive in the station overlooking the busy tracks and the shops complex.

Railroad station at Livingston, Montana. Photo by E. V. Steadman, 1895, courtesy Yellowstone National Park.

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Robert C. Hoyle

To the Tetons by Train

A Shoshone Indian lit a signal fire on the banks of the Wind River in Wyoming. A trapper made the rounds of his oval of traps and brought back a fortune in bear and silver fox. A little handful of pioneers blazed a way through the lodgepole pines. A cowboy cantered across a free range and sang to his cattle at midnight. Then across the last page of the frontier, through its color of romance and adventure, came the railroad. [1]

By the time this introduction to a Chicago and North Western Railway travel brochure advertising the "Teton Mountain Route" to Yellowstone National Park was written in 1922, the railroad had indeed crossed most of the last pages of the frontier. However, a railroad had never entered Jackson Hole, Wyoming and the Teton country, and even a close rail connection to the valley often called "the last of the old West" had been a reality for only a few years.

The possibility of a railroad for Jackson Hole can be traced back to many early rumors—some based in fact, others purely fictional. The Yellowstone Park Branch Line of the Northern Pacific Railroad reached Cinnabar, Montana, 51 miles south of Livingston, in 1883, and was extended to the North Entrance of the park in 1902.[2] Local newspapers reported that the initial surveys for this line had actually extended along several different routes through Yellowstone into the Jackson Hole country to the south.[3] Additional reports alluded to the possibility of a branch line of the Union Pacific Railroad extending from its transcontinental main line across the continental divide at Togwotee Pass, west into Jackson Hole, and then north to the South Entrance of Yellowstone National Park.[4] Many objections to the building of railroads inside Yellowstone and difficulties associated with Togwotee Pass contributed to the failure of these initial schemes. A few years later, the Oregon Short Line, a subsidiary of the Union Pacific Railroad, began construction of its Yellowstone Park Railroad from St. Anthony, Idaho. The first train arrived in Ashton, Idaho, 17 miles from St. Anthony, in June of 1906, and the line was extended to the West Entrance of Yellowstone National Park (to a town that would soon be renamed West Yellowstone), by late 1907. Passenger service to the park began the following season.[5] It was this Oregon Short Line branch that was ultimately to lead to a close rail connection to Jackson Hole.

Conant Pass, at the extreme northern end of the Teton Range, had long been an entry route into Jackson Hole used by numerous American Indian tribes for their seasonal journey into the valley. By the 1830s, when Jackson Hole had become an important crossroads of the fur trade, trappers entering the valley from the northwest often used this old Indian trail. With the completion of the rail line to the West Entrance of Yellowstone, rumors soon surfaced concerning a railroad over this historic entry into Jackson Hole to provide service to the South Entrance of Yellowstone. These rumors were fueled in part by U.S. Forest Service reports of railroad surveys headed toward Conant Pass.[6] Also, by 1909, the Chicago and North Western Railway had reached Lander, Wyoming, about 150 miles east of Jackson Hole, with speculation that the line would be extended westward toward Togwotee Pass.[7] Abundant rumors also told of railroad survey crews heading toward the town of Jackson from the south. Without a doubt, many such surveys did occur, but were either purely speculative or done to maintain rights to potential routes; they were not an indication of intended construction.

Finally, early in 1909, survey crews in the Teton Valley on the west side of the Teton Range proved to be the serious beginning of the extension of the Oregon Short Line south from Ashton. The railroad reached Driggs, Idaho, on August 27, 1912, and, with financial help from the town of Jackson, reached Victor, Idaho on July 1, 1913.[8] This end-of-line on the west side of Teton Pass would be as close as a railroad would ever get to Jackson Hole. The hauling of freight from the rapidly-growing economy of the Teton Valley had been a primary consideration in the building of what was to become known as the Teton Valley Branch, but an act of Congress in 1929, combined with the developing tourist industry in Jackson Hole, would add another dimension to the importance of this rail terminus.

Even prior to the completion of the Teton Valley Branch, dude ranching had become an important industry in Jackson Hole, and Union

With a gateway at both Victor, Idaho, and West Yellowstone, Montana, the Union Pacific could offer travelers a package that included both Grand Teton and Yellowstone National Parks with a minimum of retraced routes. Courtesy the author.

Pacific Railroad passenger service to Victor was to become a primary means of travel to the valley's many ranches. Up to a dozen ranch cars would often meet the train at Victor for the 20-mile trip over Teton Pass into Jackson Hole.[9] For many years, the railroad published an annual travel brochure touting the easy accessibility of Jackson Hole dude ranches by its daily service to Victor.

With the establishment of Grand Teton National Park by an act of Congress in 1929, the Union Pacific Railroad began to advertise this "new-old" way to Yellowstone via its Oregon Short Line subsidiary to Victor and bus service over Teton Pass, heralded as "one of the most spectacular observation points in the West."[10] Yellowstone National Park visitors were given the option of entering the park via Jackson Hole and Grand Teton National Park and leaving via the West Entrance and railhead at West Yellowstone. Early Union Pacific brochures described in colorful detail the scenic and historic grandeur of the Jackson Hole country and urged that "those planning a tour of Yellowstone should by all means arrange, if practicable, to allow the small additional time required for a visit to Grand Teton National Park, located close to it and possessing beauties differing in character but no less magnificent and inspiring than those of its sister park."[11] Many colorful railroad publications and railroad-sponsored Grand Teton/Yellowstone package tours combined to produce a good passenger business for the Union Pacific's Victor terminus.

Passenger traffic remained brisk until after World War II, when vast improvements in area roads, the growing popularity of the automobile, and the ease and speed of air travel gave visitors to Grand Teton and Yellowstone National Parks several other travel options. Freight traffic which, in the years before World War II, had grown to include refrigerator cars of potatoes and peas, carloads of grain, and hopper cars of coal, decreased with the improvement of roads and the resultant shift of freight to trucks. Passenger service to Victor continued until 1965, when a daily passenger train and daily mixed train last appeared in the Union Pacific timetable. (Passenger service to West Yellowstone had ended five years earlier).[12] With the continued decrease in freight traffic, the Interstate Commerce Commission finally granted permission, in 1981, for the railroad to abandon the 15 miles from Tetonia, a small town north of Driggs, to Victor. Abandonment of the remaining 30 miles from Ashton to Tetonia followed in 1990, and the rails were pulled up shortly afterward.

Today, the Victor depot, converted to apartments, still stands at the end of the Teton Valley Branch. The old roadbed is easy to follow across the rolling land of the Teton Valley, with the peaks of the Teton Range forming the eastern horizon. The section of the line from Driggs to Victor has become a hiking and biking trail, preserving at least one small part of the experience once enjoyed by the many who traveled to the Tetons by train.

Notes

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Paul Shea

Union Pacific Railroad Dining Lodges and Cafeterias for the National Parks

Beginning with McCartney's Hotel, the first in Yellowstone National Park, providing visitor services has been an integral function of any national park's infrastructure. As more and more visitors began coming to parks, more and more services were required. From the grand lodges to the simple comfort station, thousands of buildings have been erected in the parks in a variety of architectural styles. Early styles were rustic and matched the parks' surroundings, and most of the smaller structures were meant not to distract from the parks themselves. Later styles are more utilitarian in design, much like today's post offices.

Railroads played a defining role in the early history of national park architecture; the Northern Pacific Railroad came to Yellowstone and Glacier National Parks, and the Union Pacific Railroad came to Zion and Bryce Canyon National Parks and the North Rim of Grand Canyon National Park, as well as to the West Entrance to Yellowstone National Park. These are but two of the railroads historically associated with national parks, and their legacy of early national park building development has left the nation and the world a truly outstanding collection of architectural works.

The Union Pacific Railroad began its relationship with the western national parks on a large scale with the construction of a branch line of the Oregon Short Line Railroad. This line extended from Ashton, Idaho to the west boundary of Yellowstone National Park in Montana. Begun in 1905 and completed in November of 1907, the line saw its first visitors arrive at Yellowstone National Park on June 11, 1908. In 1923, Union Pacific, at the request of the National Park Service, formed the Utah Parks Company to provide transportation and related visitor services to the new southern Utah parks—Bryce Canyon, Zion, and Cedar Breaks National Monument—as well as to the North Rim of the Grand Canyon. With a line to Cedar City, Utah, the company then planned to use buses to conduct park tours. Expanding upon experience gained at West Yellowstone (as the town at the West Entrance of Yellowstone had come to be called), the Union Pacific began offering a variety of tours to the new parks, with some packages including Yellowstone. The company would also finance the construction of new buildings within the parks.

Gilbert Stanley Underwood, an emerging architect who had already designed buildings for concessionaires, was recommended to Union Pacific to design the new facilities needed in Utah. This recommendation came from Daniel Hull, a principle planner and designer with the National Park Service's landscape division who had met Underwood when both attended the University of Illinois. Hull's recommendation led to a relationship between the Union Pacific and Underwood that lasted throughout the 1920s and early 1930s. This association would lead to the design and construction of buildings in Bryce Canyon and Zion National Parks, on the North Rim of the Grand Canyon, and in Cedar Breaks National Monument. Underwood also designed the cafeterias at Kanab, Utah (a hub town for Bryce, Zion and the North Rim), and West

Union Pacific Dining Lodge in West Yellowstone, Montana, built in 1925.

Zion cafeteria, built in 1934, now serving as the Zion Nature Center.

Yellowstone, Montana. One of his most outstanding works, constructed in 1926 (although not for the Union Pacific), was the Ahwahnee Hotel in Yosemite National Park.

It is easy to overlook Underwood's smaller buildings—dorms, comfort stations, garages, powerhouses, and such—but one type of building that has been most neglected is the cafeteria. Underwood designed six cafeterias for Union Pacific between 1925 and 1934. These buildings were constructed to handle the need for meals when no overnight lodging was necessary.

Cafeterias constructed for the Utah Parks Company were small in scale, due to the lower numbers of visitors to the Utah parks. The architecture was nonetheless fitting for each site.

At Zion, Underwood designed a small, pleasing, rustic structure with rock corners and large windows. The exposed rafters are of a squared scissor-truss design, and complementary to the main lodge at Zion. The meals provided were in the cafeteria style, without waitresses or waiters. Today, the building houses the Zion Nature Center and provides some quarters for park employees. The main kitchen area has been closed off and remodeled, and the fireplace is enclosed by a wall.

At Bryce Canyon and on the North Rim of the Grand Canyon, cafeterias similar in design were located at the campgrounds and included camper services such as grocery stores, showers, laundry and the ever-present curio shop. The cafeteria at Bryce is no longer used for its original purpose, and the building has been modified to a great extent: both fireplaces are enclosed behind walls. It has the same exposed square scissor-truss system seen in the Zion cafeteria. The exterior mimics the lodge at Bryce Canyon and only the large fireplace at the back shows the rock structure common to Underwood's rustic designs. The cafeteria on the North Rim, like that at Bryce Canyon, is still in use as a store with camper services but not as a cafeteria.

The Kanab dining facility is perhaps the most unusual of the six cafeterias designed by Underwood. The outside is not of rustic design, and the only resemblance to the other cafeterias is the rockwork on the exterior of the fireplace. Overall, the building looks like a giant railroad barn, and is tied into an existing house that was built in 1904.

From the start in West Yellowstone, the need to provide meal services to tourists was apparent. Arriving in the early morning, rail passengers required breakfast before proceeding into Yellowstone for their tours. In the late afternoon, outbound passengers would require dinner before boarding the southbound train. In 1908, before there was a town, the Union Pacific built the first of three restaurant facilities. As traffic increased on the line due to an aggressive promotional campaign, the first facility, a tar paper shack, was replaced in 1913 by a larger and more elegant structure. This facility would also prove too small to handle all the traffic and, by 1922, an accompanying Rest Pavilion was built to provide a place for passengers to wait for a table. At that time, it was decided to build a large enough structure to handle the volume of passengers and also, probably, to make a statement about the Union Pacific Railroad's standards of first-class travel.

Gilbert Stanley Underwood's design for the new Union Pacific Dining Lodge in West Yellowstone was monumental in size—some 17,000 square feet, with about 6,400 square feet in the dining area alone. The main dining area could seat up to 350 people at a time, although usually it sat between 250 and 300. Included in the dining area is an arrowhead-shaped fireplace large enough to accommodate built-in seats for those wanting to get closer to the fire. Additional facilities included a kitchen large enough to prepare some 1,000 meals per day, a separate bakery, a butcher shop, an employee dining area, a scullery, a linen room, a coal room, the manager's office, and several large walk-in refrigerators and freezers.

Recent research has led to the discovery that the1922 Rest Pavilion was incorporated into the

Kanab, Utah, cafeteria, built in 1928 and tied into 1904 house on right.

design by Underwood. The pavilion, which sat on the site chosen for the dining lodge, was rotated 90 degrees and incorporated into the new building. The side entrance doors of the pavilion were taken out and a fireplace installed in their place. New doors were added at the ends, a rock facade was placed around the existing columns, and restrooms were added. The old Rest Pavilion, now called the Firehole Room, is located on the east end of the dining lodge.

Operated from mid-June through the first week of September by the Union Pacific Dining Car Division, the Union Pacific Dining Lodge could not have made money. Surely, its intent was to make a statement of pride for the Union Pacific Railroad.

Over the years, all these cafeterias provided a needed service and contributed to the overall impression that visitors received of the national parks. As railroad travel declined in the late 1950s, the Union Pacific started to scale back its services in national park areas. As tours were discontinued, cafeterias were no longer needed and were slowly closed down. The cafeteria buildings in Bryce Canyon and Zion National Parks have been transferred to National Park Service ownership, but the facility on the North Rim of the Grand Canyon is still owned by the concessionaire. The cafeteria at Cedar Breaks was taken down, the facility in Kanab is privately owned, and the Union Pacific Dining Lodge is now owned by the town of West Yellowstone. With the exception of interior changes, the remaining cafeterias designed by Underwood for the Union Pacific Railroad are still in good shape. They are available for viewing and open to the public (and you can get a good Chinese dinner at the one in Kanab). In West Yellowstone, the Union Pacific Dining Lodge is available for conventions. Recently, the Yellowstone Historic Center in West Yellowstone was formed to oversee rehabilitation of the Dining Lodge and other railroad buildings located in the Oregon Short Line Terminus Historic District. Engineering and needs assessment studies are currently being done on the Dining Lodge and other structures in cooperation with the National Park Service's Cooperative Program For Architectural Conservation (Barry Sulam, Program Manager at Montana State University), and the National Trust for Historic Preservation (Barbara Pahl, Director of Mountains and Plains Region).

Photos by the author, courtesy West Yellowstone Historical Society Archives.

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Terry E. Maze

Petrified Wood and Railroads

While I am writing, I want to say a word to you in regard to the Petrified Forest. When we went to the Petrified Forest from Santa Fe and left the train at Adamana, there was only one other person stopped off there to see the Petrified Forest.... As I consider it one of the most marvelous things I have ever seen and am thoroughly enthusiastic over it, I am spending a good deal of time in telling all my friends about it....

Excerpt from a letter written by Dr. G. C. G. Watkins, 1929.

Because of Dr. Watkins's letter, Hunter Clarkson, director of the Santa Fe Railway auto tours, scheduled trips to the Petrified Forest and Painted Desert in Arizona. These tours would never rival other auto tours of the Southwest and signaled the beginning of the end of the 50-year relationship between petrified wood and the railway company. This connection began in the 1850s when surveys along the 35th parallel for a railroad were undertaken. Whipple's survey, in 1853, brought public awareness of the existence and uniqueness of petrified wood. Further development of a railroad would wait until after the Civil War, when the Atlantic and Pacific Railroad Company (later part of the Atchison, Topeka and Santa Fe Railroad) was chartered to build along the earlier survey lines. By the early 1880s, tracks had been laid from Albuquerque west, reaching the area of the petrified wood deposits east of Holbrook, Arizona.

Stagecoach departing Adamana, Arizona, for the Petrified Forest, 1925.

Completion of the railroad allowed scientists and visitors access to this wood turned to stone. Scientists would examine specimens and write reports, visitors would take home samples to show to their friends. More and more scientists and visitors would come. In the early years they mostly arrived by train, getting off at Adamana or Billings, Arizona, two Arizona whistle stops on the railroad. Often renting a horse from Adam Hanna, who had a ranch near the railroad, they would ride north to the Black Forest in the Painted Desert, or south to Chalcedony Park, as the Petrified Forest was then sometimes called. But these "forests" and "parks" had few living trees. Scattered on the ground, instead, were concentrations of petrified wood pieces, creating a natural carpet. In 1891, Charles L. Lummis wrote that, from the railroad, "...one soon reaches the northern edge of the forest, which covers hundreds of square miles...you seem to stand on the glass of a gigantic kaleidoscope, over whose sparkling surface, the sun, breaks in infinite rainbows...." Descriptions like this soon began attracting more scientists, curiosity seekers, vandals, and businessmen. The railroad had given these people easier access to the fossil logs. In search of quartz and amethyst crystals, eastern jewelers hired men to dynamite the logs while others made petrified wood popular for home decorations, paperweights, etc. Loads of petrified wood were shipped by rail to the West Coast and the Midwest for cutting, polishing, and sale. When it became obvious that cutting petrified wood was akin to cutting peanut brittle without shattering it, the market dropped. However, one company planned to erect a stamp mill to crush the petrified wood into industrial abrasives.

By this time, Arizonans living near Chalcedony Park were becoming more concerned about the destruction of the fossil forests. A resolution passed by the Arizona Territorial Legislature in 1895 caused two townships containing petrified wood to be withdrawn from settlement. The railroad continued bringing scientists and visitors to the area, while commercial

Campbell's Hotel in Adamana, Arizona served patrons of the Atchison, Topeka and Santa Fe Railroad. The proprietor was also custodian of the monument from 1912-1918.

interests attempted to find a way to mine the petrified wood and ship it out by rail. By 1899, the amount of petrified wood being shipped had dropped; however, without protection, visitors, vandals, and businesses would continue the ever-increasing destruction of the forests. The railroad had been a mixed blessing. It allowed scientists access to study the wood but also permitted others to carry off whatever they could manage. Increased efforts at preservation resulted in 95 square miles containing petrified wood sites being set aside in 1906 as a national monument. President Theodore Roosevelt, using the authority recently granted him in the Antiquities Act, created a Petrified Forest National Monument deemed worthy for its "scientific interest."

The result was more and more visitors arriving by train (and later car). A hotel opened in Adamana, the stop closest to the monument, to serve the train passengers who disembarked there. Following a tour of the national monument, they boarded the next train heading toward their destination. Eager to build on the increased leisure time of American families in the 1890s and early 1900s, the Santa Fe Railway began actively promoting Western wonders. Paintings of the Petrified Forest and other natural wonders decorated their stations and business offices. People could now visit the places seen previously only in paintings or photographs

Photos courtesy Petrified Forest National Park.

An alliance, of sorts, between business and preservationists resulted. Railroads wanted to protect the scenic attractions for their customers while preservationists wanted to protect the same areas for future generations. For Petrified Forest National Monument, the Santa Fe advertised "stop-overs" where tourists could get off at Adamana, take a leisure tour to the nearby forest, and return at dusk. Those with more time could stay over and visit the forests farther south or those outside the boundaries of the national monument. Back on the next train, they traveled to the next scenic attraction in the Southwest.

The proximity of the railroad and Adamana to the petrified wood sites guaranteed this increase in visitors. With it came a growing problem that continues to this day. By 1907, between 1,500 and 2,000 people visited the area annually, with each person allowed to carry away about eight pounds of specimens as souvenirs. Through its initial advertising, the Santa Fe Railway added to the problem by inviting visitors to help themselves. Protest from the General Land Office resulted in a change to the brochure warning of the consequences of removing a protected resource.

After World War I, the increase in accessibility by private vehicles brought a decline in train passengers. However, the hotel at Adamana was modernized and a fleet of vehicles now transported guests to various petrified wood sites. In 1926, the highway just north of Adamana was officially designated U.S. Route 66. Nearly all visitors entered the national monument via Adamana with many, after fording the treacherous Puerco River, venturing only to First Forest. Despite more visitors enjoying the Southwest by auto, in 1925 the Santa Fe Railroad and the Fred Harvey Company initiated their Southwest "Indian Detours." Tourists would travel by train to certain stops, spend one or more days visiting several area attractions, return to a train and go on to another stop. In 1930, the first tan and brown Packard "Harveycar" delivered a single California tourist to the Petrified Forest. Those who followed would be treated to views of the Painted Desert and the Petrified Forest. After enjoying a basket lunch, they would later dine at Harvey's La Posada, Winslow, or another of the Harvey inns along the railroad. Among those arriving by train were Albert Einstein and his wife. He was so fascinated by the petrified wood that the railroad officials had trouble getting the Einsteins back to the train on time. The tours to the Petrified Forest were never profitable, however, and within a few years were dropped altogether.

In the 1920s, the Stone Tree Inn was built along Route 66, overlooking the Painted Desert. Builder Herbert D. Lore purchased several sec-

tions from the Santa Fe Railway Company. The competition between Adamana and this new business resulted in a portion of the vast Painted Desert being added to Petrified Forest National Monument in 1932. (The monument became a national park in 1962.) The railroad's interest in providing stopovers further diminished.

By the time of America's involvement in World War II, the train did not stop near the monument at all. Fewer and fewer people rode the train and, after 70 years of involvement with petrified wood, the railroad quietly ended its connection. Adamana soon became a place of vanished memories of wagonloads of petrified wood, famous people like John Muir and Albert Einstein, scientists abuzz over natural curiosities, visitors struggling with bags of petrified wood, and lost cars in the quicksands of the Puerco River.

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Laurie V. Slawson

Copper Mining, Railroads, and the "Hellhole of Arizona"

For almost 30 years, various individuals and companies attempted a series of unsuccessful mining ventures in the Silver Bell Mining District, located 35 miles northwest of Tucson, Arizona. In 1903, however, William F. Staunton, E. B. Gage, and Frank M. Murphy played an important role in the ultimate development of the district through their formation of the Imperial Copper Company, a subsidiary of the Development Company of America, headquartered in Tombstone. The Imperial Copper Company was incorporated on May 15, 1903, and soon began systematic mining and development of its property. On January 20, 1904, incorporation papers were filed for the Arizona Southern Railroad Company, with all stock held by the Imperial Copper Company.[1] Although the actual date of completion is unknown, the railroad began operations on September 10, 1904, and by the end of the month had assisted in transporting several thousand tons of ore to the Copper Queen smelter at Douglas, Arizona.

The Arizona Southern Railroad initially was constructed to more efficiently and economically move the mined copper and silver ore to Douglas for reduction. By 1907, however, there was sufficient ore being produced that, to save expenses, the Imperial Copper Company constructed a smelter about 15 miles northeast of Silverbell under its affiliate, the Southern Arizona Smelting Company, for which the town of Sasco was named.

In 1905, two years after the Silverbell mining camp was established by the Imperial Copper Company, the camp's population had increased to 1,000 residents. By 1910, Silverbell was a booming town, with a population of 1,118 residents.[2] The Imperial Copper Company continued to be the primary mining operation in the Silver Bell Mining District until 1911, when the company went bankrupt and sold its holdings to the American Smelting and Refining Company, known today as ASARCO, Incorporated.

After the 1912-1915 copper depression, Asarco began developing its holdings in the dis-

trict. By 1920, a revitalized Silverbell was populated by about 1,200 miners, shopkeepers, other workers, and family members. In addition to a variety of dwellings, the community had the Imperial Hotel, the Imperial Store, a school, a post office, a hospital, two saloons, the Chase and Oeltjen Dairy, a Wells Fargo office, a grocery, a Chinese bakery, three barbers, a shoemaker, a justice of the peace, and a notary public.[3] Law enforcement was provided by several officers over time, including Deputy Sam McEuen, who took cover behind an ore car while he successfully chased Ramón Castro (who had murdered Grazio Manzo) down an abandoned mine tunnel.[4] The town of Silverbell had a notorious reputation for lawlessness, from which it gained its nickname, "The Hellhole of Arizona."

With the cessation of major mining activities in the district in the 1920s, Silverbell declined in population to the point that only 45 residents remained by 1931, of which only 10 resided within the town proper.[5] The historic townsite was abandoned in 1954, when Asarco began open pit operations and established a new town of Silver Bell, four miles to the southeast. All surviving company-owned buildings from the old town were moved to the new location.

Since 1988, archeological and archival investigations of the Silver Bell Mining District have been ongoing. In 1991, excavations were undertaken at three sites that were identified as the historic Silverbell townsite, the town dump, and the Arizona Southern Railroad. The goals of this phase of the project were not only to investigate the recorded sites and mitigate anticipated impacts from mining expansion, but also to produce a comprehensive history of the Silver Bell Mining District. One of the primary questions to be answered was: How were the development and growth of the Silver Bell mining industry, the Arizona Southern Railroad, and the town of Silverbell related?

As early as May 1903, existing railroads made attempts to establish a line to the Silver Bell Mining District, but with no success. After the incorporation papers for the Arizona Southern Railroad Company were filed on January 20, 1904, it became General Manager Staunton's task to build the railroad between Silverbell and Red Rock, on the Southern Pacific line. By the end of the month, a contract was awarded to Grant Brothers of Los Angeles, an experienced railroad contracting firm. Construction of the standard gauge railroad began with grading at Red Rock on February 17, 1904, and took seven months, with 600 to 700 men working day and night shifts.[6] The first nine miles of the line from its junction with the Southern Pacific Railroad at Red Rock were across essentially level desert terrain that presented no engineering or construction difficulties other than the occasional installation of small trestles to handle flash floods; however, the remaining 12 miles of the line posed a problem. Continuing toward Silverbell, the grade increases to more than two percent just north of Jesuit Hill and Imperial Creek (now Silver Bell Wash). At that location, a wye was constructed for turning the locomotives. The construction of the railroad grade up Jesuit Hill and into the camp was accomplished through the means of one-and-one-half switchbacks (i.e., three switches), where a maximum grade of 3.4 percent was reached.[7] Although the switchbacks solved the problem of the climb into the camp, they created another problem: the uneven number of switches meant that the train either had to back into Silverbell, or, after leaving the mining camp, it had to back into Red Rock, more than 20 miles away. Thus, if the train were short enough, the wye was used to move the locomotives to the front after leaving Silverbell.

In addition to the grade problems caused by the elevation of the camp, Imperial Creek had to be crossed in two places. Just before reaching Jesuit Hill, a 76-foot-long, five-span trestle was built across the wash. Although the locations of both ends of this trestle have been identified, no remains have been found of any portion of it. A second trestle, measuring 106 feet in length, was built across Imperial Creek within the camp's boundaries, and a wagon road was built underneath it. No evidence remains of this six-span trestle, which is now buried by a mine dump.

Besides transporting ore to the Douglas and Sasco smelters, the railroad also provided passenger and mail delivery service between Silverbell and Red Rock, from where a connection could be made to Tucson on the Southern Pacific Railroad. This service continued after the closure of the Sasco smelter in 1910. During its boom years, tours to Silverbell were offered to Tucson residents, with passengers riding either on the train itself or in converted Cadillac, Oldsmobile, Buick, or Buda automobiles that ran on the tracks. The Oldsmobile track car was known as

Unidentified woman and dog watching Arizona Southern coming into town, 1907. Train is moving forward on the middle switchback on Jesuit Hill just prior to backing into town on the upper switchback. Courtesy Special Collections Division, University of Arizona Library, Tucson, William F. Staunton collection.

the "Speeder" by Silverbell residents, and was primarily used for emergencies and special deliveries.[8]

The initial rolling stock for the railroad, which was leased from Southern Pacific, included two locomotives, two cabooses, a commissary car, a cook car, three dining cars, four bunk cars, and two water cars. Private cars also were used occasionally, including Car No. 14 and the Michigan, which later was renamed the Silverbell.[9]

The water cars were of special importance to the residents of Silverbell. Because of the high mineral content of the local water, all drinking water had to be brought into the town. At first, this was done by freighters on wagons and muleback. However, once the Arizona Southern Railroad was in operation, water was brought in on the train and offloaded into the camp's water storage tank to be sold to Silverbell residents. The level of impurities was so high in the local water that the train also had to carry a sufficient amount to supply its engines for the round-trip between Red Rock and Silverbell.[10] The Arizona Southern Railroad continued to operate under Asarco's ownership, although not on a continuous basis, until December 30, 1933.[11] At that time, the tracks were removed and sold, and the Sasco smelter was dismantled.

The establishment, growth, and eventual abandonment of Silverbell and the Arizona Southern Railroad were tied closely to the price of copper and the national economy. Making the survival of the mining town even more precarious was the adverse environment in which it was located. The lack of locally available drinking water was the single most prohibitive factor in the growth and expansion of Silverbell, which was a borderline town at best. Even though the railroad was able to provide water for the small community that lived there, the opportunity for a true town to flourish never existed. Thus, the main question of the historic phase of this ongoing research project was answered. The historic mining town of Silverbell and the Arizona Southern Railroad represented an interconnected, interdependent system. The mining community could not have developed as it did without the railroad, and the railroad had no reason to exist once the town and the mines were abandoned.

Notes

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Geoffrey Bleakley

The Copper River and Northwestern

Alaska's Bonanza Railway

Once Alaska's longest and most important railway, the Copper River and Northwestern (CR&NW) is now largely forgotten. Following its closure in 1938, its running stock was sold, its track was salvaged, and much of its roadbed was reclaimed by nature. Nevertheless, the CR&NW remains one of the region's more significant historic features. Not only did this line facilitate the development of the Kennecott copper property, Alaska's single most valuable mineral deposit, but it also helped focus a national debate over the control of natural resources which ultimately changed the very course of the country.[1]

Few Americans reached the Wrangell Mountain region until the late 1890s, when the international publicity surrounding the Klondike discovery lured thousands of prospectors to the north. While primarily attracted by gold, some also searched for other metals.

Jack Smith and Clarence Warner made Alaska's most important copper discovery while exploring the Kennicott Valley in 1900. Pausing for lunch near the mouth of National Creek, the partners noticed a green outcrop high on a distant hillside. When they scrambled up to the spot, they found a fabulously rich deposit, which they accurately dubbed the "bonanza."[2]

Trestle construction in precipitous Wood Canyon. Hegg Collection, PCA 124-66, courtesy Alaska State Library, Juneau, Alaska.

A young mining engineer named Stephen Birch soon purchased a controlling interest in the property and established the Alaska Copper and Coal Company to develop it. After transferring control of his firm to the Alaska Syndicate, largely financed by the Guggenheim family and J. Pierpont Morgan, Birch reorganized as the Kennecott Mines Company, the predecessor of the Kennecott Copper Corporation.[3]

Pack horses and sleds were able to haul sufficient materials to build and equip the mine and mill site, but a railway was necessary to move the ore. One would have to be built.

The Alaska Syndicate considered four possible routes from tidewater into the Copper Basin. The two beginning in Valdez planned to use either Thompson or Marshall Pass to reach lower tributaries of the Copper River. Both, however, possessed steep grades. Two more direct routes up the Copper started in Eyak (soon renamed Cordova), and Katalla.

The company initially rejected the Cordova route because it required bridging the Copper River between two glaciers and laying track across several miles of shifting, rubble-covered ice. A route from Katalla looked promising, particularly as it would provide the easiest access to the Bering River coalfields. Katalla, however, was situated on an unprotected beach rather than a sheltered, deepwater bay like both Valdez and Cordova.

Construction first started from Valdez, but company officers eventually moved their operation to Katalla. Engineers were certain they could build a breakwater to shelter ships and a wharf sturdy enough to withstand the violent squalls which regularly swept the north Pacific.[4]

Michael Heney showed better judgment. More familiar with Alaska conditions due to his earlier experience building the White Pass and Yukon Railway, he recognized the advantages of the Cordova route and started his own line there. He also claimed the only feasible passage up the Copper River.[5]

Recognizing its error, the Syndicate bought Heney's holdings in 1906, but continued working from its original site until November 1907, when a massive storm destroyed most of its facilities at Katalla. The company subsequently relocated to Cordova and hired Heney to construct its grade.[6]

Although only 195 miles long, the CR&NW was an engineering marvel. On a scale similar to the later Alaska Highway and Trans-Alaska Pipeline, the project took a peak crew of 6,000 men nearly five years to complete and cost the then staggering sum of $23,500,000.[7]

To overcome the valley's precipitous terrain, the CR&NW elevated much of its track, placing about 15 percent on either bridges or trestles. While many such structures still stand, three are especially striking monuments to the skill of their builders.

The Miles Glacier Bridge, often called the "million-dollar" bridge despite the fact that it actually cost nearly a million and a half to complete, was the route's single most ambitious feature. Located between the termini of the Miles and Childs Glaciers, this 1,550-foot-long, four-span, steel structure not only had to withstand the Copper River's eight-mile-per-hour current, but an endless barrage of floating icebergs.

In order to save time and money, the contractor built this bridge during the winter of 1909-10 on a wooden falsework, erected on top of the frozen river. As the third span neared completion that spring, the temperature rose and so did the water, causing the ice to drift downstream. Faced with losing their whole season's labor, the steelworkers managed to drag the 450-foot section back into position and bolt it permanently into place. They finished just in time. One hour later, the ice went out, taking all of their scaffolding with it.[8]

The CR&NW overcame another serious obstacle 17 miles east of Chitina when it successfully spanned the canyon of the Kuskulana River. Built in two months during the bitter winter of 1910, this 525-foot-long, 238-foot-high structure was, on completion, the seventh highest bridge in the United States.[9]

By comparison, erecting the wooden trestle over the Gilahina River probably seemed downright easy. Despite requiring over a half-million board feet of lumber, this massive, 880-foot-long and 90-foot-high structure was completed in just eight days.[10]

The Syndicate initially planned to extend the CR&NW all the way to Fairbanks, often referring to its Chitina-Kennecott section as only a spur. That effort, however, relied on it gaining access to the Bering River coalfield, which the company meant to develop as an inexpensive source of fuel. Unfortunately, the government had imposed a 160-acre limitation on coal claims and, when large concerns like the Syndicate tried to circumvent the law by consolidating groups of individual holdings, President Theodore Roosevelt withdrew all Alaskan coal lands from entry. This development, of course, was a major blow to the company, which consequently shelved its entire expansion plan.

In 1910, Richard Ballinger, the Interior Secretary appointed by Roosevelt's successor, William H. Taft, attempted to reopen several of the coal tracts that had earlier been withdrawn. Ballinger's action angered conservationists, particularly Gifford Pinchot, the nation's chief forester. Pinchot took his objections to the press, publicly accusing Ballinger of conspiring with the Syndicate to steal Alaska's wealth. Taft responded by firing Pinchot, an action which so riled Roosevelt that he attempted to unseat Taft in the Republican primary, and, when he lost, challenged the incumbent as an independent. Needless to say, this split the Republican vote and ultimately led to the election of Democrat Woodrow Wilson.[11]

Little remains of the CR&NW today. The Miles Glacier Bridge still crosses the Copper River, although its northern section partially collapsed during the great Alaska earthquake of 1964. Current plans favor converting this part of the route into a scenic bike path.

The Kuskulana Bridge still stands as well. Now adapted for automobiles, it is part of the state of Alaska's Chitina-McCarthy Road, which follows that portion of the abandoned railway grade and provides the main vehicular access into Wrangell-St. Elias National Park and Preserve.

The original Gilahina Trestle burned in 1916, but was quickly rebuilt. While now derelict, its looming presence just north of the McCarthy Road adds tremendous character to the route and

provides an ideal site from which to interpret the remarkable story of Alaska's bonanza railway.

Notes

1 For a more thorough analysis of the railway's regional impact, see Lone E. Janson, *The Copper Spike* (Anchorage: Alaska Northwest Publishing Company, 1975). For more on its construction, see Alfred O. Quinn, *Iron Rails to Alaska Copper* (Wilmington, NY: D'Aloquin Publishing Company, 1997).

2 William Douglass, "A History of the Kennecott Mines," typescript, Douglass Collection, University of Alaska-Fairbanks, 4. The Kennicott River was named for Robert Kennicott, one of the first Americans to explore Alaska. Kennicott's name was eventually given to the region's largest copper producer as well, but was spelled "Kennecott," the style later adopted by the Kennecott Copper Corporation.

3 Elizabeth A. Tower, *Ghosts of Kennecott: The Story of Stephen Birch* (Anchorage: Elizabeth Tower, 1990).

4 Woodrow Johansen, "The Copper River and Northwestern Railroad," *Northern Engineer* 7:2 (N.d.): 20; William R. Hunt, *Mountain Wilderness. Historic Resource Study for Wrangell-St. Elias National Park and Preserve* (Anchorage: National Park Service, 1991), 140-41.

5 Hunt, 141; Elizabeth A. Tower, *Big Mike Heney. Irish Prince of the Iron Trails* (Anchorage: Elizabeth Tower, 1988), 32-35.

6 Tower, 35-37.

7 Howard Clifford, *Rails North. The Railroads of Alaska and the Yukon* (Seattle: Superior Publishing Company, 1981), 148.

8 E. E. Swergal, "History of Alaska's Longest Railway," *Alaska-Yukon Magazine* 11: 2 (March 1911): 17-18; Johansen, 30.

9 William Alley, "Steel Rails and Ice: Alaska's Copper River and Northwestern Railway," *Railroad History* 168 (Spring 1993): 65.

10 Ibid., 67.

11 George E. Mowry, *The Era of Theodore Roosevelt and the Birth of Modern America* (New York: Harper Torchbooks, 1962) 250-57. A later, more complete, and better-reasoned examination of the issue in the 1940s cleared Ballinger of any wrongdoing.

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Ann Kain

Frontiers in Transportation

Denali and the Alaska Railroad

Denali National Park and Preserve is one of the oldest units in the national park system in Alaska, having been designated in 1917 as Mount McKinley National Park. Renamed Denali National Park and Preserve in 1980, the park is located in Interior Alaska and encompasses a large section of the Alaska Range, including Mt. McKinley, North America's highest peak at 20,320 feet.

Transportation and communication have always been among the biggest challenges facing Alaska. The geography and climate of the state are major impediments to the development of transportation and communications systems. Overland travel is extremely difficult in Alaska, with its rugged, mountainous terrain, deep river gorges, glaciers, permafrost, tundra and marshlands. Subzero temperatures and the deep snow of winter compound the geographic obstacles. Due to these conditions, it was not until the early 1900s, when interest in resource development was on the rise, that any effort was made to improve transportation into interior Alaska and the Mount McKinley region.

The Act of 1912 granting Alaska full territorial status also authorized President Taft to appoint a commission to "examine railroad routes from the seaboard to the coal fields and to the interior and navigable waterways...which will develop the country and the resources...." The Alaska Railroad Commission (ARC) was appointed by the President to conduct this initial survey, and Secretary of the Interior Franklin Lane established the Alaska Engineering Commission (AEC) to select the final route.

Based on the information provided by the AEC, the route would run from the coastal town of Seward to the south and terminate at the mining community of Fairbanks in Interior Alaska; as it passed through the Alaska Range, its route paralleled the eastern boundary of the present-day park. Several railroads, running short distances, were already in existence along this route and

The Alaska Railroad train as it approaches the train station in Denali, summer, 1999. Photo by the author.

would eventually be incorporated into the Government Railroad.

The railroad route was built, for the most part, through undeveloped territory requiring the creation of an extensive infrastructure to support the construction activity. Supply terminals, shops, and freight yards had to be built; communication lines, construction camps, commissary and medical services also needed to be developed along the route to serve the needs of the employees. Several railroad camps erected along the route, such as Anchorage, grew into prosperous communities. Talkeetna, south of the park, and Cantwell and Healy, along the park's eastern border, are other former camps that continue to provide a sense of community in the park region.

Although the U.S. involvement in World War I pulled manpower away from the project and cost increases took a toll, 229.8 miles of railway and 30 miles of siding were completed by the end of 1918.[1] Construction progressed so that, by the end of 1920, 456 miles of track had been laid with an 80-mile gap remaining over some of the most difficult terrain. Construction of three major bridges and negotiation of the sheer wall canyon of the Nenana River would be required to close the gap. Hurricane Gulch of the Chulitna River and Riley Creek—very deep gorges to bridge—would require length as well as height. Of the two, Hurricane Gulch was undoubtedly the most dramatic bridging effort. The AEC hired the American Bridge Company to erect the bridge over Hurricane Gulch. Using the cantilever method of construction, crews worked from both sides, meeting in the middle, approximately 400 feet above the Chulitna River. Despite the difficulties of moving steel building material from one side to the other, anchoring and building backstays, and ensuring precise measurements so the two ends would meet exactly as planned, the project was completed in 60 working days.[2]

Another difficult section of track to lay was through the Nenana River canyon at the park's eastern boundary, north of Riley Creek. The steep walls of the canyon required a great deal of rockwork, which included blasting rock for the construction of three tunnels and chiseling a level roadbed on the canyon walls. By the end of 1921, the railroad clung to the canyon walls 200 feet above the rushing Nenana River.[3]

As segments of the railroad were completed, passenger, mail, and freight service were offered. In 1922, the first tourists to arrive by rail entered Mount McKinley National Park, having taken the train from Fairbanks, ferried across the Tanana River at Nenana, and continued again by train to McKinley Park Station. The last connective set of tracks was the Tanana River Bridge at Nenana, completed in early 1923. President Warren G. Harding drove the golden spike at Nenana on July 23, 1923, signifying the completion of the railroad. A month later, the Government Railroad was designated the Alaska Railroad.

The railroad had a tremendous impact on Interior Alaska and Mount McKinley National Park. It was the catalyst for the tourism boom. As historian William Brown has noted, the line connected "Alaska's interior with Seward's ice-free port; to Seattle and the rest of the world by ocean ships; increased communication via telephone lines constructed along the route and provided mail service; stimulated mining in isolated districts; spawned towns and agricultural enterprise; and revolutionized interior river transportation."[4]

Among the railroad communities developing along the route was McKinley Park Station. By the early 1920s, entrepreneurs Maurice Morino and Pat Lynch constructed roadhouses at the eastern entrance area of the park, anticipating the influx of both railroad workers and, eventually, tourists. By 1923, Morino's homestead included a large roadhouse on the present site of Morino Campground. Morino allowed others to construct cabins on his property, expanding his homestead into quite a complex. Duke Stubbs built a trading post there and established a fox farm by 1925. With the completion of the railroad in 1923, the park was finally directly accessible by rail. Dan Kennedy, a McKinley Park Station resident, obtained the first concession contract for the park. He established the Savage River Tourist Camp, 12 miles west of McKinley Park Station. Tourists were taken to the camp by

Riley Creek Trestle spans one of the two most difficult gorges to be bridged by the AEC. Photo by Grant Pearson, 1933-1934, courtesy Denali National Park and Preserve.

pack train where they enjoyed the natural wonders of the park. In 1925, the Mount McKinley Tourist and Transportation Company took over the Savage River Camp, expanding it to include a large dining hall and kitchen as well as a recreation hall complete with a dance floor, in addition to the wall tent accommodations. Stagecoaches and eventually buses were used to provide transportation to the camp from McKinley Park Station. The McKinley Park Road, constructed between 1923 and 1938, ran 90 miles from McKinley Park Station west to the Wonder Lake area and provided access deep into the park. The road connected the mining community of Kantishna to the Alaska Railroad and allowed for the development of a second tourist camp at Copper Mountain (now Mt. Eielson), some 60 miles into the park.

The Alaska Railroad was truly the lifeline of the park. Everything came to the park by train. All supplies, equipment, mail, livestock, stagecoaches, buses and automobiles arrived on the train. Local residents, park employees, territorial and federal officials, and tourists depended on the train to access Interior Alaska.

The tourist accommodations at Savage River and Copper Mountain (Eielson) were rather primitive, and by the 1930s pressure began to mount for hotel construction. Recommendations were made for a lodge to be built at Wonder Lake, in the heart of the park. In the 1930s, the Alaska Railroad proposed a hotel at the park entrance. Plans for Wonder Lake were eventually abandoned.

Otto F. Ohlson, General Manager of the Alaska Railroad, began discussions with the Interior Department for a hotel at the park entrance. In 1937, construction was finally begun using a $350,000 grant from the Public Works Administration. Ohlson arranged for the railroad to transport the building materials free of charge and the Alaska Steamship Company agreed to reduce its shipping rates by 35%. The hotel opened in time for the 1939 tourist season.[5]

Tourism came to an abrupt halt with the U.S. involvement in World War II. After the war, the park was once again on track as a tourist destination. Wartime construction of the Alaska Highway through Canada (Alcan) and the Glenn Highway connecting the Alcan to Anchorage provided an overland transportation route from the "Lower 48" states to Alaska. Slowly, tourists began to arrive in Alaska via automobile. But it was not until the Parks Highway opened between Fairbanks and Anchorage in 1972 that tourists began to arrive at the park via automobile in significant numbers.

Today, tourists arrive at the park in cars, trucks, recreation vehicles, and buses to make the trek into the wilderness of Denali. Travelers are treated to spectacular vistas and an abundance of wildlife as they slowly make the trip to the Eielson Visitor Center along the winding gravel road. With the increase in automobile traffic, the National Park Service has found it necessary in recent years to restrict the park road traffic to bus transportation as a means of maintaining the primitive condition of the road in order to provide the visitor with a true frontier experience. However, the Alaska Railroad remains a favorite mode of transportation to the park. Tourist companies include rail transportation as part of their travel packages, with hundreds of travelers arriving daily via the Alaska Railroad throughout the summer tourist season.

Notes

1. Joshua Bernhardt, *The Alaska Engineering Commission: Its History, Activities and Organization* (New York: D. Appleton Company, 1922), 33.
2. E.G. Amesbury, "Erection of Hurricane Gulch Arch Bridge in Alaska," *Engineering News-Record* 88:4 (1922): 144.
3. William H. Wilson, *Railroad in the Clouds: The Alaska Railroad in the Age of Steam, 1914-1945* (Boulder: Pruett Publishing Company, 1977), 79.
4. William E. Brown, *A History of the Denali–Mount McKinley Region, Alaska* (Atlanta: U.S. Government Printing Office, 1991), 104.
5. William H. Wilson, "Ahead of the Times: The Alaska Railroad and Tourism, 1924-1941," *The Alaska Journal* 7:1 (1977): 23.

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Frank Norris

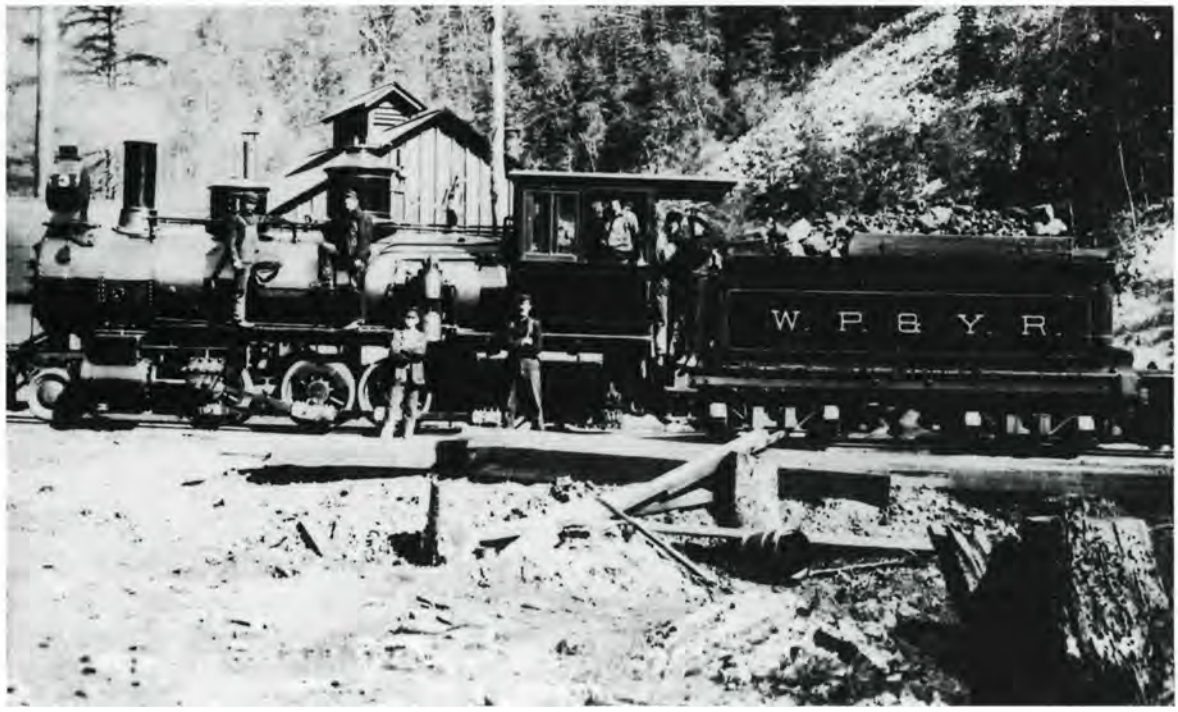
Alaska Tourism, Skagway, and the White Pass and Yukon Route

Today, tourism rules supreme throughout southeastern Alaska. More than 300,000 cruise ship passengers take the well-known "Inside Passage" route each summer, and more than a 100,000 other tourists see the state's "panhandle" by air, ferry, and road. Visitors overwhelm residents for weeks at a time in the downtown areas of Skagway, Juneau, Ketchikan, and Sitka, attracted as they are by the region's justifiably world-famous scenery, wildlife, Native culture, and both Russian and early American history.

At Skagway, located at the northern end of the Inside Passage, summertime tourism is clearly big business. Several days per week, four or even five large cruise ships plus a ferry and innumerable small planes descend on the village, and the town's population can swell to four or five times its normal size. Tourists browse the gift shops or take a town tour and, as a highlight of their visit, they hop aboard the well-known White Pass and Yukon Route railroad and head north to the top of spectacular White Pass or perhaps continue on to Bennett, British Columbia.

Towns elsewhere in southeastern Alaska often seem overwhelmed by all the summertime commotion, because large-scale tourism is a relatively recent phenomenon. In Skagway, however, tourism is as old as the town itself. Tourists have been visiting Skagway for more than 100 years. In 1900, as today, tourists have been admiring the town's quaint architecture, wandering its streets and avenues, drifting into its gift shops, and riding the remarkably scenic White Pass railroad.

Skagway's history is inseparable from that of the world-famous Klondike gold rush. In the summer of 1896, when gold was discovered near the Klondike River in the Yukon River basin, Skagway was only a homestead occupied by one family. A wild-eyed visionary, "Captain" William Moore, and his family had settled there in 1887 because he firmly believed that the Yukon basin would eventually yield large amounts of gold.



Shortly after the first tracks were laid for the White Pass and Yukon Route railway, in the summer of 1898, the first locomotives arrived in Skagway. Not long afterward, the line hauled its first load of tourists—on flat cars—on a four-mile excursion to the end of track.

Few believed him, but 10 years later, Moore's dreams came to fruition—in spades—when tens of thousands of "stampeders" waded ashore and began streaming north to the Yukon. By the fall of 1897 more than 3,000 people had engulfed his homestead, and by the spring of 1898 Skagway was Alaska's largest city. Throughout the mad winter of 1897-98, the route over the mountains north of town was tortuous and slow; to improve the route, some entrepreneurs built wagon roads or tramway lines while others ran pack trains. Skagway, the base of the White Pass trail, was involved in a desperate race for survival with nearby Dyea, at the southern end of the Chilkoot Trail. For most of that winter, the towns along the Chilkoot clearly had the upper hand, and Dyea poised on the verge of victory.

But in April 1898, a chance meeting in a Skagway hotel radically tipped the balance between the two port towns. Thomas Tancred, a London financier, visited the area in hopes of bankrolling a railroad, but he quickly became convinced that building a route over either pass was technically impossible. (Several others before him had reluctantly come to the same conclusion.) But Mike Heney, a contractor familiar with the verities of railroad construction, was also in town. Heney had recently returned from a reconnaissance of the two trails and, unlike the others, was certain that a narrow gauge railroad could be built from Skagway to the top of White Pass. Legend has it that Heney and Tancred met, quite coincidentally, one afternoon; they talked all evening and well into the wee hours, and by the following dawn they had cemented a deal to finance and build what would become known as the White Pass and Yukon Route railroad.

Construction of the railroad began in late May 1898, and by mid-June, crews of workers were laying rails down the center of Broadway, Skagway's primary north-south street. Fueled by a readily available work force running into the thousands and by ample supplies of cash from British investors, the rails quickly advanced up Skagway Valley. By July 21, the line—now two miles long—opened to passenger and freight traffic, and a month later, rails extended an additional two miles toward White Pass. Soon after, however, construction was slowed by a combination of factors: steep grades, precipitous terrain, news of a mining strike in nearby Atlin, B.C. (which siphoned off hundreds of workers), and the onset of winter—grim even by Alaskan standards—which brought subfreezing temperatures, a shortened workday, and more than 30 feet of snow at the higher elevations. Railroad officials, however, pressed on, and on February 4, 1899, the crowd—and a railroad train—gathered at White Pass summit (20 miles north of Skagway) to celebrate. The horrors of White Pass and the infamous "Dead Horse Trail," where more than 3,000 horses had perished just a year earlier, had finally been overcome.

The celebration having concluded, construction resumed—slowly at first due to the frigid, snowbound conditions, then more quickly as signs of spring began to emerge. North of White Pass, the line was in Canada, and railroad officials, having obtained legal access from the Interior Ministry, began laying track north toward the Yukon River. On July 6, 1899, another celebration was in order when rails were laid another 20 miles to the shores of Bennett Lake. Here, at the northern end of the Chilkoot and White Pass trails, thousands of miners had gathered just a year earlier to begin a long boat journey to the gold fields. Before the rails reached there, Bennett was still an active trail town; the completion of the railroad to that point, however, rang the death knell to traffic on both trails.

By July 1899, steel rails had conquered the rugged Coast Mountains, and the worst obstacles had been overcome. But less than half of the 110-mile route had been constructed. To complete the line, railroad officials divided their forces in two: one group of workers built north from Bennett City (at the south end of Bennett Lake) to the far end of the 25-mile-long lake, while the other group headed north to the line's projected terminus, along the Yukon River, and started laying rails to the south. Neither crew encountered substantial difficulties, and by late July 1900, the remaining 70 miles of track had been completed. On July 29, 1900, a railroad official drove a "golden spike" at Carcross, at the northern end of Bennett Lake. The White Pass and Yukon Route (WP&YR) railroad—a line that many swore could never be completed—was now an accomplished fact.

The Klondike gold rush, in full swing when railroad construction began, was over by the summer of 1900. Those attracted to the fervor of gold rush riches had migrated, by this time, to Nome in far-off western Alaska, while in the Klondike gold fields, the claims of individual

The White Pass and Yukon Route, built from Skagway north to Whitehorse beginning in 1898, was headquartered in these buildings for more than 70 years. In 1981, before restoration efforts began, they were rapidly deteriorating.

miners were rapidly being bought out by corporations which were intent on mass production methods. In the Klondike, there was no easy gold for the taking.

The railroad was, however, perfectly positioned to reap the harvest of another "gold rush" that promised even greater rewards. Alaska tourism, in 1900, was still a small-scale industry; less than 20 years old, it was the exclusive province of steamship carriers who operated several excursions each summer through the straits and inlets of southeastern Alaska's "Inside Passage." Before "Klondike fever" had transformed the north country, the tourist route had wound north to Juneau, then headed off to Glacier Bay. But the gold rush, and the publicity it engendered, made tourists as well as the rest of the gold rush tide want to visit Skagway. Several tourist parties, therefore, visited Skagway during the summer of 1898, and at least one of those groups rode the new railroad (in chairs placed on open flat cars) to the end of track. Tourists, Skagway, and the White Pass railroad have been intertwined ever since.

Tourism to Alaska and to nearby Yukon Territory remained modest until World War II. Since then, the construction of the Alaska Highway, the commencement of regular ferry service through southeast Alaska, and the advent of the modern cruise ship industry have all helped stimulate tourism. The National Park Service has played a role, too. In 1967, at the invitation of Alaska Governor Walter Hickel, the NPS began laying out plans for a proposed park that would include the two major gold rush trail corridors and several turn-of-the-century Skagway buildings. Those plans came to fruition in June 1976, when Congress passed a bill authorizing Klondike Gold Rush National Historical Park. The park's headquarters is now located in the former WP&YR depot and administration building, and tourists fortunate enough to take a ride on the White Pass are rewarded with a commanding view of gold rush ghost towns, trails, and other resources included within the park. The railroad, once the mainstay of the town's economy, is now operated only in the summertime. It remains, however, a defining element in the tourist's Skagway experience.

Suggested Readings

Two excellent histories of the White Pass and Yukon Route railroad, both of which include extensive passages about Skagway and the Klondike gold rush, are Ed Bearss's *Proposed Klondike Gold Rush National Historical Park: Historic Resource Study* (Washington, DC: National Park Service, 1970), and Roy Minter's *The White Pass: Gateway to the Klondike* (Fairbanks: University of Alaska Press, 1987).

Readers should also see Hard Drive to the Klondike: Promoting Seattle During the Gold Rush at <www.cr.nps.gov/history/klse/hrstoc.htm>.

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This article is a summation of the author's previous work on this topic, entitled *Legacy of the Gold Rush: An Administrative History of Klondike Gold Rush National Historical Park* (Anchorage: National Park Service, 1996).

Gordon Chappell

The Curious Case of the Buried Locomotives—or Railroad Archeology with a Vengeance

The White Pass & Yukon Route consisted of a transportation complex including a railway first organized in 1897, before the Yukon gold rush led to the building of a narrow gauge line from Skaguay (as it was then spelled), across the mountains into Canada to the Yukon River, below a number of portages at a point that would come to be named Whitehorse. Construction extended from 1898 to 1900, resulting in about 110 miles of three-foot gauge railroad divided into three companies. The Pacific and Arctic Railway and Navigation Company operated the 20.4 miles of railroad in Alaska Territory, the British Columbia Yukon Railway operated the 47.1 miles of railroad in the Canadian province of British Columbia, and the British Mining, Trading and Transportation Company (later renamed the British Yukon Railway), operated the 43.2 miles in Canada's Yukon Territory. But all three railways operated under the umbrella name "White Pass & Yukon Route" (WP&YR); note "Route," not "Railway." The WP&YR umbrella later encompassed the British Yukon Navigation Company, which operated stern-wheel steamboats on the upper Yukon River and Lake Atlin in Canada; and the American Yukon Navigation Company, which operated boats on the lower Yukon River in Alaska Territory. Eventually, the WP&YR included a bus line, an airline, and a number of the world's first container ships.

The river and lake boats, bus line, and airline are long gone today, but the railway still operates in Alaska and British Columbia (although it is idle in the Yukon Territory), and hauls thousands of tourists off cruise liners out of Skagway (as it is now spelled) each summer.

For much of its history, however, the railway had to struggle to exist, eking out only modest profits. In 1949, the Skagway River began chewing into the edge of the grade or roadbed of the track just outside of Skagway, and the railway needed to dump some impediment to this erosion. No easy source of large hunks of rock came to mind. However, the company had a number of retired and long-obsolete 40- or 50-year-old locomotives cluttering the Skagway Yard, and decided to dump five of these locomotives, along with a rotary snowplow, along the edge of the grade to serve as riprap and protect the bank.

Thus, in 1949, the railway dumped the first two locomotives at Milepost 2.5: Nos. 60 and 61, both built by the Baldwin Locomotive Works. No. 60 had been built in May, 1900, as a narrow gauge, outside-frame 4-6-0 type or "ten-wheeler," typically used for passenger traffic. No. 61, built in June of the same year, was a 2-8-0 or "consolidation"-type freight locomotive. The railroad had "retired" No. 60 in 1942 and No. 61 in 1944, and both of these worn-out locomotives had been cluttering the Skagway Yard ever since; no local scrap dealers existed, and it would have cost more to ship the hulks to Vancouver or Seattle than they were worth as scrap. Also in 1949, the railway dumped Locomotive No. 62,

White Pass & Yukon Route outside-frame narrow gauge 4-6-0 locomotive No. 60, excavated from use as riprap along the Skagway River in Alaska.

White Pass & Yukon Route narrow gauge 2-8-0 locomotive No. 61.

another Baldwin 4-6-0, built in June, 1900, and retired in 1945, at Milepost 2.3. In 1951, the railway dumped yet a third outside-frame Baldwin 4-6-0, No. 67, built in May, 1901, and retired in 1945, at an unknown location along the Skagway River. Subsequently, the railway also dumped a second-hand rotary snowplow as riprap. In time, the railroad bulldozed gravel or earth over the locomotives, and they became, truly, "archeological sites" of a railroad nature.

Outside-frame narrow gauge locomotives were not a common type; the drive wheels were mounted on the axles *inside* the frames, with the bearings in the frames beyond the outer side of the wheels, and with the driver counterweights located at the ends of the axles outside the frames. This arrangement gave the larger narrow gauge locomotives better balance, but smaller, earlier narrow gauge locomotives did not have outside frames, and comparatively few outside-frame "ten-wheelers" or 4-6-0 types ever operated in the United States. Thus, the three outside-frame 4-6-0s dumped as riprap along the Skagway River are fairly rare locomotives.

Locomotive Nos. 60 and 61 were retrieved from the river and dumped on the ground on their sides outside of Skagway about a decade ago. It seems desirable to retrieve the other two 4-6-0s as well. All built by Baldwin within about a year, the three locomotives would have interchangeable parts. It would be possible to do a "cosmetic" restoration of at least one of the locomotives to its original appearance, cleaning it of mud and rust, applying a new boiler jacket of sheet metal over hardwood lagging on top of the boiler, building a new wooden cab and a new wooden pilot or "cowcatcher," and providing a tender. It would be desirable to restore the one 2-8-0 as well.

In addition to dumping the locomotives, the railway dumped seven bodies of tenders in a little hollow below the Skagway City Cemetery on the side of the tracks away from the river, opposite the hulk of Locomotive No. 62, which lies on the river side. Perhaps one of these tender bodies was of the type needed for a 4-6-0. It would undoubtedly need a new wooden frame and new trucks. Restoration of the original physical appearance of one or two of these locomotives would not be easy or cheap, but it *is* feasible, and, in view of their rarity, highly desirable.

The story of the White Pass & Yukon Route—and especially of the Pacific and Arctic Railway and Navigation Company, which operated that part of the line that lay within the United States—is a part of the history of the Klondike gold rush of 1898-1900. That history is commemorated and preserved today at Klondike Gold Rush National Historical Park in Skagway. Here lies a rare opportunity for the National Park Service and the City of Skagway to resurrect and restore to their early appearance a couple of the early locomotives of the railroad that played a key role in a part of history they seek to preserve.*

Note

* The railroad renumbered its locomotives in 1899 beginning with the number 51 for old No. 1, so Nos. 60 and 61 actually were the 10th and 11th of the 51 steam and 26 diesel-electric locomotives the company eventually owned (a total to date of 77 locomotives). Thus, Nos. 60 and 61 were not the 60th and 61st locomotives on the railroad, as one would assume. Furthermore, the railway started operation with a variety of second-hand locomotives, some of them short-lived. Nos. 60 and 61 actually were only the fourth and fifth locomotives built new to the order of the railroad and put in service the year the railroad reached completion. Some of the later steam locomotives actually were owned and operated by the Army but used on the railroad during World War II.

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Photos by Carl Gurcke, 1999.

Diane M. Garcia and Nancy L. Smith

Allegheny Portage Railroad

New Support for Old Arches

From 1834 to 1854, a technological workhorse stepped back and forth over the Allegheny Front using 11 levels and 10 inclined planes to connect the Juniata and Western Divisions of the Pennsylvania Main Line Canal. Two railroads and three canal divisions comprised this statewide transportation system which connected Philadelphia and Pittsburgh, ultimately reducing that trip from three weeks by wagon to four days by rail and water. For its part, the Allegheny Portage Railroad hoisted and hauled not only passengers and cargoes but the canal boats themselves to overcome a rise and fall of 2,570 feet.

Allegheny Portage Railroad National Historic Site, a unit of the national park system, was created to preserve and illustrate the history and remains of this, the first railroad to cross the Allegheny Mountains. Although designated a National Engineering Landmark, the park is among the lesser known of National Park Service railroad sites. Models, industrial artifacts, demonstrations, and documentary evidence are obvious devices used to present aspects of constructing, operating, and traveling on the Allegheny Portage Railroad to today's visitors, but the park's best-kept secret is the systematic stabilization of remnants of the line's permanent stone masonry and earthwork now hidden along the reforested right-of-way.

Dismantling process—coping course, culvert 1733.

By hand labor, the mostly immigrant work force grubbed and cleared the 36-mile corridor designated by engineers and surveyors, cut through landforms, and filled gaps. They put together culverts and drains, bridges and viaducts, retaining walls and water supply systems, and blasted through a rock escarpment to open what Appleton Contractors called the first railroad tunnel in America.

For construction purposes, the line was divided into sections varying from 2,600 to 5,900 feet and stations of 100 feet. All levels and inclines were numbered from west to east, but the Johnstown and Hollidaysburg, Long and Short, and Summit Levels also acquired geographically characteristic names. Culverts spanning from 5 to 20 feet were numbered by section and also by station, indicating their distance from the western terminus.

The National Park Service owns the extant top of Incline 1, together with a two-mile segment of the Long Level and most of the Summit Level, together with Incline 6 through the foot of Incline 10. Engine house foundations at the heads of Inclines 1, 6, 8, and 10; 18 original culverts and drains; and one historic tavern are studied and preserved.

The historical data section of the Historic Structure Report for the Allegheny Portage Railroad recommended preservation, stabilization, and rehabilitation of historic structures and foundations. In 1993, the architectural data section described existing conditions. The following

Splitting sandstone slabs for culvert 1656 using feathers and wedges.

year, the Williamsport Preservation Training Center, now the Historic Preservation Training Center (HPTC), began emergency stabilization work on two culverts. In 1995, a task directive was approved for the phased preservation and stabilization of various culverts. Since then, a priority order of culverts endangered by time, the elements, re-vegetation, and re-engineering has been established and preservation treatment is underway.

Training goals for these projects range from preparation of condition assessments and treatment recommendations for a historic stone structure to documenting and disassembling the structure (identifying, documenting, and tagging the stones), constructing cut stone arches and relaying and repointing stones in the original positions.

To appreciate the scope of the work, one must understand the character of an arch. An arch is a structure built to support the weight above an opening. It consists of wedge-shaped stones or bricks called voussoirs put together to make a curved bridge which spans the opening. The keystone, the central locking stone, bears the weight of the stones pressing down from above. The pressure from above in turn pushes on the stones next to the keystone on both sides. This pressure, or thrust, is relayed from stone to stone down both sides of the arch until it reaches the bottom blocks, called springers, and then is carried down the piers to their foundation and into the ground. If the arch is too long or if the piers at the ends are too light, the outward thrust will push the sides out and the top will cave in. If the arch is too light at the top, or too heavy at the sides, the sideward thrust of the arch will push the top up, and the sides will cave in. When supporting its own weight and the weight of crossing traffic, every part of the arch is under compression. Several of the remaining culverts of the Allegheny Portage have supported the weight of many tons of earth fill and the weight of not only the traffic they were built to carry but of additional fill and traffic of the Pennsylvania Railroad (PRR) where that company's line coincided with the historic alignment.

Constructing an arch is tricky since the structure is completely unstable until the two spans meet in the middle. One technique is to build elaborate scaffolding, called centering, below the spans to support them until they meet. Stonemasons start at the bottom of the arch and place voussoirs on the centering. The centering supports the voussoirs until the keystone is inserted.

Mortar is generally used in building an arch, with more than one type and more than one way to apply it. Modern builders use a variety of techniques, generally having a joint 10 millimeters thick. With the lime/water mix common historically, the joint can be as fine as 1.5 millimeters. The trouble with this traditional mix is that the lime is soluble in water and does not adhere strongly to the stone. In time, the jointing material may perish and the block may slip out of position.

The first duty in working with the culverts is to reveal the arch itself. Trees and other vegetation tend to grow over the historic fabric, both obscuring it and doing actual damage. Overburdening loads are concerns at culverts, as are erosion and weathering.

The culvert at station distance 1656 offers a successful case study. Its inlet had been buried by erosion decades ago and slope drainage was cutting a new channel across the historic trace. The inlet was located by tracing it through the outlet ruin and the mostly intact barrel vault. Removal of the alluvial overburden in 1996 revealed the inlet with 50 percent of its face stones intact. Reconstruction of the missing features was determined to be a worthwhile effort and that work was undertaken in 1997.

Stone for the reconstruction was obtained from the Briar Hill Quarry of Glenmont, Ohio because it is working stone from the same geologic formation as is found at the Portage Railroad. Freshly quarried stone is preferred

because its performance in cutting and shaping is more predictable than recovered or re-used stone. Stone came from the quarry in large slabs of thickness defined by the existing coursing of the culvert wall. Weighing over 1,200 pounds, these slabs were five to six feet long, 22 to 36 inches wide, and 11, 13, and 15 inches thick. From the slabs, stones of random lengths were cut and faced using traditional hand tool methods.

A short assignment of using traditional feather and wedge tools to cut the large slabs into individual stones demonstrated to the HPTC crew the labor-intensive and often frustrating methods their 19th-century counterparts likely used. For the most part, however, the stones were cut using a gas powered masonry saw outfitted with a dry cut diamond blade, then split using wedges from the feather and wedge sets.

Stonemason Rene Laya was the instructor, demonstrating and reviewing masonry methods for the HPTC crew. Various size handsets, bull points, toothing chisels, and tracers were used to dress the new stone. In two and a half days, three masons dressed approximately 30 linear feet of 11-inch-thick stone blocks with both curved and straight faces.

To speed production, the crew switched to pneumatic stone carving tools that would still replicate historic textures. Use of a four-point brush chisel and a machine point was an acceptable alternative to a hand point method.

Instead of the wooden stone sleds the portage workers used to move rock, the HPTC crew used cranes and a skidsteer loader. The stones were cut at the park maintenance area, loaded onto a stake body truck and taken to the culvert. Cranes and a loader offloaded the truck and helped to place the stones into culvert 1656.

Dismantled culvert—backer wall exposed, culvert 1733.

A centering constructed of three three-quarter-inch thick plywood ribs was cut to match the radius of the arch. The three ribs were connected by a pair of two-by-fours laid flat to act as bearing points for four bottle jacks that supported the centering once it was set. Bottle jacks allowed adjustments to fine-tune the plumb and level position of the centering and allowed for the centering to be easily removed after the work was complete.

Mortar was used in the re-assembly of 1656. The mixture chosen was one part gray Portland cement, one part hydrated lime, and six parts C144 masonry sand. Archeology on the Portage remains suggested that some stone work was laid with little or no mortar, while other contractors chose to use their favorite mixture of adhesive. With the culvert's historic function of routing water under the railroad trace restored, conservators decided that the use of mortar would improve maintainability.

Once the voussoirs and keystone were in place, the related backfill and drainage concerns addressed, and the mortar set, the centering was removed. The inlet area was regraded and seeded and the continued functioning of 1656 ensured.

A considerable amount of work went into the building of the Allegheny Portage Railroad; preservation of its features often requires a similar kind of persistence. Using a combination of historic and modern tools and construction methods, today's conservators can safely and efficiently match the fabric of historic masonry while strengthening and repairing the historic structure.

Additional benefits in the form of interpretive material accrue with each repair. Project-related research has the potential to add to what is known about the people associated with the line and with industries, commercial ventures, and communities affected by the line.

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Photos by NPS Historic Preservation Training Center, 1996. Courtesy Allegheny Portage Railroad National Historic Site.

R. Patrick "Pat" McKnight

"Paint and Park"

The Lehigh & New England Railroad Caboose 583

Steamtown National Historic Site in Scranton, Pennsylvania, has over 100 locomotives and other pieces of rolling stock in its care, requiring varying levels of work. Time and resources do not permit a full Historic Structure Report (HSR) and restoration for each piece at present. Even if time did permit a full HSR, with recommendations for complete restoration, the park's Restoration Shop does not have the resources to restore all the railroad locomotives and cars in a timely manner before others would completely deteriorate. In the interim, a brief Cosmetic Painting and Stabilization Documentation, or "Paint & Park," report allowing for painting and stabilization of the structure is produced. The "Assessment of Action" (Section 106 compliance) has concurrence for the projects.

The "Paint & Park" report includes a brief historical study researching the ownership and revenue service history of the rolling stock to determine historically correct colors and markings for its home railroad during steam revenue service. Armed with this report, the Restoration Shop is able to provide basic maintenance and stabilization to the equipment, and a new coat of paint. The paint is a stabilizing agent that will allow the car to remain in the yard with a minimal amount of deterioration. The correct cosmetic painting will allow the equipment to fit into the park's theme.

Painting is a common way of preserving railroad equipment. While in service, most cars and locomotives were repainted as often as once every five years. Much of the equipment at Steamtown has been painted over the years. In most cases its current appearance does not reflect how it appeared when under steam revenue service. It is this period of time that Steamtown is trying to interpret. The Lehigh & New England Railroad (LNE) 583 caboose in the Steamtown collection had a "Paint & Park" report done in early 1999. The caboose was in need of stabilization. The past paint job done during the mid-1980s was beginning to deteriorate.

History of the Line 583 Caboose

The Lehigh & New England 583 caboose was one of a fleet of five (series 580-584) steel cabooses rostered by the LNE. Constructed for the LNE during 1937, in the Reading, Pennsylvania, shops of the Reading Company, this style of caboose proliferated in the Northeast.

The LNE, created in 1895 from the remnants of the Poughkeepsie & Boston Railroad Company, operated until 1961. The Central Railroad Company of New Jersey (CNJ) then formed the Lehigh & New England Railway (also referred to as the LNE) to operate the still profitable parts of the LNE. In addition to the tracks, the CNJ acquired much of the LNE rolling stock at a cost of $10.1 million.[1] The CNJ operated the line until 1974, when it pulled out of Pennsylvania. Shortly thereafter, the CNJ sold three of the five cabooses to Vermont-based Steamtown USA.[2] The CNJ sold the fourth caboose to MCP Fabricators who had taken over the rail yards at Tadmor, Pennsylvania.[3] This caboose was later relocated to a suburban backyard in Bath, Pennsylvania. The fifth caboose remained in service and was incorporated into Conrail. Conrail donated this caboose to the Tri-State Railway Historical Society in 1988. [4]

Limited references appear about the 583 caboose until the summer of 1960. Synthesizing the history of this car required reviewing the history of the five constructed for the railroad. The LNE made an early modification to the original caboose design high-mounted grab irons on each end that were horizontal rather than the more-common vertical.[5] During the 1940s, three of the cars, 580, 583, and 584, received an additional stove, resulting in two smokejacks, one on

LNE 580 caboose, November 19, 1967, after replacement of the "fried egg" herald with the letters "LNE." Courtesy Michael DelVechio.

each end of the cupola.[6] The LNE also added handhold loops to the top of the ladders similar to its older cabooses.

During the late 1950s, additional modifications took place. Small awnings were added to the windows and kick plates put on the end platform railings. The car markings also changed. The herald (unique marking for a specific railroad) and car number were moved off-center. The appearance of the caboose number switched from the traditional Railroad Roman to a style resembling New Courier.

The Lehigh & New England Railway made more changes, adding a high visibility iridescent orange disc on a black field to the cupola ends. During the late 1960s, the CNJ replaced the 'fried egg' herald with the letters LNE, simplifying the markings. They also filled in the window next to the stove on car 583 and removed the second smokejack at this time. Initially the 583 retained the LNE colors, but was ultimately repainted into CNJ's colors during the early 1970s.

Shortly after pulling out of Pennsylvania, the CNJ offered the Steamtown Foundation the opportunity to bid on four of the old LNE cabooses. They accepted Steamtown's bid of $6,200, plus $1,508 each for freight charges.[7] It is not definitively known what happened to the other three cabooses purchased from the CNJ. No documentation exists confirming any transfer from Steamtown USA to another entity. Only one caboose, the 583 (though notes refer to it as the 580 at this time), made its way to Scranton, PA, when Steamtown USA relocated around 1984-1985. In 1987 a video clip of Steamtown shows the caboose being repainted red, but no markings added yet.[8] In 1988 it received cleaning on the interior and exterior, including repainting.

In reviewing the history of the LNE cabooses, there seems to be a distinctive difference between the modifications of the steam era and post-steam era. Images available indicate the caboose maintained its simple, assembly-line look from 1937 and into the early 1950s. The car's appearance of this period needs to be preserved.

Images dating after 1960 (the post-steam era) indicate significant changes. Window awnings and kickboards appear in these photos as well.

Recommendations

Using the results of the research from the "Paint & Park" report it was determined that the caboose retained a similar appearance throughout its operating days in the steam era. This could be done with relative ease and little effect on the historic fabric. All bad paint and rust were removed, with some rusted-out sections replaced. The Restoration Shop primed and repainted it caboose red with white markings and lettering as documented in historic photographs. Plexiglass windows were replaced with regular glass where possible. Kick plates and awnings (post-steam era modifications) were also removed. It was suggested that a cover over one of the windows be removed, as well as a second smoke jack be added to reflect its 1940s appearance. The latter two recommendations were not followed at this time.

One of the most significant changes made to the caboose was numbering it as the '583' as opposed to the '580.' At some point, the caboose was repainted with an incorrect number. Numbering of locomotives and rolling stock within the railroad industry is very systematic. Research tied to the "Paint & Park" report, and physical evidence on the caboose indicated '583' is the correct number. That change, and the centering of the herald and the number has brought the caboose back to a steam era appearance.

Final Product

The work that results from a "Paint & Park" report is by no means a full-scale restoration. It is a better approach than allowing the structure to deteriorate for want of basic stabilization work. Researching the appearance of the structure during the steam era makes the resulting product more significant to the site. Had the park decided to repaint the '583' as it appeared before the report, the caboose would have had a non-steam era appearance, as well as an incorrect

number. Now that the car is stabilized, a HSR and full restoration will be undertaken in the future.

A number of "Paint & Park" reports have been completed on other pieces of railroad equipment over the last year at Steamtown. Two boxcars, a flatcar, a gondola and two switcher locomotives have received reports. Most of these have received stabilization and cosmetic painting. If the Restoration Shop had to wait for a full HSR to be generated, only one or two of these might have received needed work. It must be noted, however, that the "Paint & Park" reports are an interim measure, and are not intended to replace the HSR.

Notes

1 Christopher T. Baer, William J. Coxey, and Paul W. Schopp, *The Trail of the Blue Comet, A History of the Jersey Central's New Jersey Southern Division* (The Kutztown Publishing Company, Inc., 1994), 371.

2 Bank checks information for stub numbers 2582 and 2584. Steamtown National Historic Site Archival Collection—Steamtown Foundation Papers (STEA 3287).

3 Doug Lilly, "Wood, Steel and Fried Eggs: Cabooses of the Lehigh New England," *Flags, Diamonds and Statues*, 6:1, Issue 21, Lehigh New England, Nostalgia Series, Videotape (VHS) (Chalfont, PA: Stewart Hobbies, Inc., 1990), 45.

4 DelVechio, Michael (MDelvec952@aol.com),"Re.: Questions about LNE caboose 580." E-mail to Patrick McKnight (PAT_MCKNIGHT@nps.gov). [8 December 1998].

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6 Ibid.

7 Central Railroad of New Jersey "Invitation to Bid" to Steamtown Foundation. STEA 3287.

8 Lehigh New England, Nostalgia Series.

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For more information on the LNE 583 or Steamtown's other restoration projects, visit the park's website <www.nps.gov/stea>.

R. Jay Conant and R. Patrick "Pat" McKnight

The Rutland Railroad's Caboose No. 28

Steamtown National Historic Site in Scranton, Pennsylvania, has a collection of over 100 pieces of railroad rolling stock, including locomotives, various types of freight cars, passenger cars and cabooses. These pieces represent dozens of railroad companies that operated in the past. One of these companies was Vermont's Rutland Railroad, which ran from 1860 to 1961. One piece of equipment at Steamtown is the Rutland Caboose #28, which has been fully restored and is on exhibit at the park.

Author Conant, a member of the Rutland Railroad Historical Society, discovered that no line drawing of the #28 exists today. Corresponding through email from Montana with park staff in Scranton, Pennsylvania, he has been able to put together a reasonably accurate representation of this caboose using computer aided drawing (CAD) tools. The resulting document will aid Steamtown National Historic Site (NHS) staff in interpreting and preserving the caboose, and provide the Rutland Railroad Historical Society with previously unavailable information.

Caboose #28 is one of a group of supposedly identical wood cabooses, numbered 25 through 37, built in 1920 at the railroad's shops in Rutland, Vermont. However, comparison of the length and height of #28 with caboose #36,

which currently is located in Bellows Falls, Vermont, indicates that the body of #28 is one-and-one-half inches shorter in length and one inch taller than #36. Window placement is also slightly different. The cupolas on the two cabooses differ markedly. The #28's cupola is fairly short and has straight sides, while #36's is taller and the sides have a noticeable slope outward. According to a former Rutland Railroad employee, cupolas were subjected to quite a bit of stress because of the jostling the caboose received during operation and, as a result, needed to be replaced fairly often.

The staff at Steamtown NHS hopes to continue to take part in the exchange of information regarding railroad history with railroad museums, historical societies and individuals with railroading interest. Steamtown is situated in the former Delaware, Lackawanna & Western yard in Scranton. The yard was once a major transportation hub in the Northeast. Now Steamtown is a hub for railroad history.

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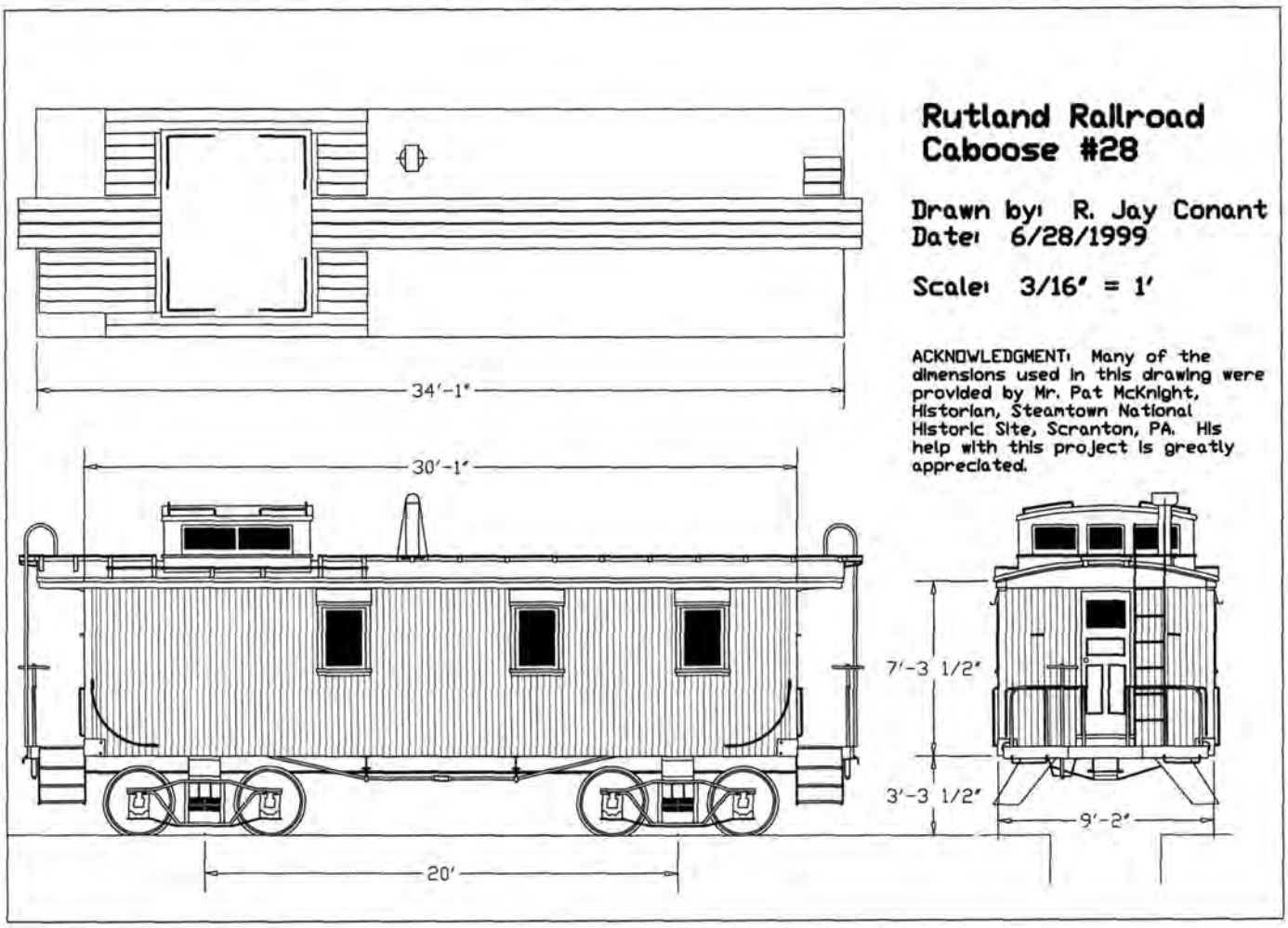

Rutland Railroad Caboose #28, drawn by R. Jay Conant with assistance from Pat McKnight, 1999. Scale: 3/16" = 1'.

Gordon Chappell

The Sacramento Locomotive Works of the Central Pacific and Southern Pacific Railroads, 1864-1999

Threatened by floods in recent years, a change in corporate ownership, and obsolescence, the Sacramento Locomotive Works of the Southern Pacific Railroad has potentially the highest level of historical significance. The new owner of this industrial complex, the Union Pacific Railroad, has moved the few remaining active functions of this shop complex to Roseville, California. Standing on 119 acres of prime real estate immediately north of the downtown business district in Sacramento, California, it is an attractive area for both city government and real estate interests for residential or commercial development, or both. Meanwhile, the shops stand almost entirely vacant, and the city and real estate interests plan to demolish most of the complex. The Union Pacific has agreed to lease two buildings plus a transfer-table pit and the turntable to the California State Railroad Museum, a part of the California State Park system. But that is a small fraction of the shop complex. The significance of the complex cannot be overstated.

This complex of railroad shops originated as the main shops of the Central Pacific Railroad, which began construction eastward in 1863 from the navigable waters of the Sacramento River which connected with San Francisco Bay and, through the Golden Gate Strait, with the Pacific Ocean. These shops and nearby waterfront trackage in Sacramento constituted the original western terminus of the Central Pacific. The Central Pacific had built eastward over the most difficult mountain construction that any railroad in the world had yet attempted, reaching a junction with the westward-building Union Pacific at Promontory Summit, Utah, on May 10, 1869. The Central Pacific thus formed half of the nation's first transcontinental railroad. Brick and timber buildings still stand in this complex of shops, which was constructed and in service before completion of the railroad. While the structure, reputed to be the earliest—built in 1864 while the Civil War still raged—burned in February 1996, other portions of the complex that date as early as 1867 or 1868 remain. These are the last surviving buildings of the first transcontinental railroad dating from its years of construction!

Sacramento Locomotive Works, showing boiler shop built c. 1888 with additions in 1905 and 1914.

The history of this complex began when the railroad was deeded a wetland known as China Slough for its shops, and built its first shop buildings—wood frame ones—in the vicinity of Sixth and H streets in Sacramento around the fall of 1863. The railroad prepared for the present complex of buildings by driving pilings in four feet of water until the tops were at the water line, then filled around the pilings with granite riprap from Rocklin, California, then sand and silt from the nearby Sacramento and American rivers. The railroad then laid four feet of solid granite on top of the piles and riprap, and began construction of brick and timber buildings. The last of these reached completion and was occupied in 1869. By 1869, a total of 20 acres had been reclaimed from the slough and filled to four feet above the

Sacramento General Shops, Southern Pacific Railroad. Interior of locomotive machine/erecting shop. Note California Northern Diesel-electirc locomotive no. 201.

water line, a job that kept more than 100 teams of animals at work.

The buildings in this complex with Central Pacific associations are also associated with the "Big Four" of California entrepreneurs: Collis Potter Huntington, Mark Hopkins, Charles Crocker, and Leland Stanford. The latter was destined to become a California governor and founder of a great university named for his late son, Leland Stanford, Jr.

Having built the Central Pacific (which in 1870 was extended to the shores of San Francisco Bay and, by ferryboats, to San Francisco itself), the Big Four in subsequent years began another project, the Southern Pacific Railroad. The Southern Pacific built first to southern California, then eastward across Arizona and New Mexico Territories in the 1870s and 1880s to a junction in Texas with a new subsidiary of the Southern Pacific, the Galveston, Harrisburg and San Antonio Railway. Through that railway, the Southern Pacific eventually acquired trackage all the way to the Gulf Coast via the Mississippi River at New Orleans. Similarly, through construction by subsidiaries operating under other names, and by buying up independent short lines, the Southern Pacific extended itself northward to the Columbia River at Portland, Oregon. Because its corporate structure was more flexible and useful for the purpose of such expansion, the Southern Pacific eventually even swallowed up the old Central Pacific Railroad. Thus, the shops in Sacramento became not merely the main shops of the Central Pacific (stretching from San Francisco to Ogden, Utah), but also the main shops of the Southern Pacific, which stretched from Portland through San Francisco and Los Angeles to Arizona, New Mexico, Texas, and ultimately, New Orleans. They served one of the nation's greatest railroad systems.

Most American railroads purchased their locomotives from a gradually shrinking number of locomotive builders, such as Burnham, Parry, Williams and Company's Baldwin Locomotive Works in Philadelphia; the Rodgers Locomotive Works in Paterson, New Jersey; the Schenectady Locomotive Works in Schenectady, New York; H. K. Porter & Company in Pittsburgh; the Mason Machine Works in Taunton, Massachusetts; and the Lima Locomotive Works in Lima, Ohio. Most of these concerns became consolidated during the 20th century into the Baldwin Locomotive Works and the American Locomotive Company, though the number would proliferate again briefly with the advent of diesel-electric locomotives before again shrinking to a minimum. But, as far back as the 1870s and 1880s, a few major railroads undertook to design and build their own locomotives, generally while still buying others from established locomotive-building firms. The Central Pacific and later Southern Pacific railroads were among those few which built their own locomotives, and it was at the Sacramento Shops that they undertook locomotive design and construction, principally under the direction of a talented staff of mechanics headed by General Master Mechanic Andrew J. Stephens. This activity lent the Sacramento Shops its later name: the Sacramento Locomotive Works. Thus, this shop complex was one of the few railroad-owned and operated shops in the nation in which a railroad company designed and built its own locomotives. It started with efficient, standard 4-4-0s, of which it began 10, the first completed in July, 1872. It went on to build 4-6-0s, 2-8-0s, and many other types, but also built experimental locomotives such as No. 229, an 1882 4-8-0 that proved so successful that the railroad ordered 20 more to the same specifications from a commercial locomotive builder, Cooke. A less successful experiment was No. 237, *El Gobernador* (Spanish for "The Governor," referring to Leland Stanford, Sr.), a massive 4-10-0. Between 1872 and 1937, the shops built more than 200 steam locomotives. Thus, the Sacramento Locomotive Works is a rare surviving example of a railroad shop complex in which

locomotives actually were designed and built, not merely repaired and remodeled.

According to Walter Gray, a recent director of the California State Railroad Museum, the system shops of the Southern Pacific Railroad constituted at one time the single largest industrial complex on the Pacific Coast, and probably west of the Rocky Mountains, for a number of decades. It employed as many as 7,000 people at one time. Here, the railroad not only built, repaired, remodeled, and maintained railroad locomotives and passenger and freight cars, but undertook many other activities. The railroad had its own glass manufacturing plant, the products of which can be seen in the older rolled glass in many of the shop buildings. It had a sawmill and planing mill in which logs from Oregon and northern California railroad timberlands were milled into bridge timbers and finished lumber for construction of railroad bridges and buildings across the system, and probably also for use in passenger and freight car construction or repair. The railroad had both brass and iron foundries to turn out car wheels, wheel bearings, and other components. It manufactured the drive shafts and other machinery of San Francisco Bay ferryboats owned by the company, and did job work for many other companies. In fact, there was little of a mechanical nature that these shops did not do.

As of the beginning of 1999, the shops still possessed much integrity. The 29-stall roundhouse built in 1868 unfortunately was torn down in the late 1950s to make room for a new building, but the last of several turntables that served that historic roundhouse is still in place, a rare survivor.

Interior of locomotive machine/erecting shop, built 1868-1869, with additions in 1875, 1888 and 1905.

The northeast corner of the Erecting Shop, constructed in 1868 as a machine shop, remains, enlarged to the west by construction of a later third shop bay and also extended further south. A transfer table was installed to the west of it, and the pit of that transfer table still is in place today, with its rails. The transfer table itself was donated to the California State Railroad Museum and has been dismantled and stored. It could easily be reinstalled. Transfer tables are far more rare than turntables!

Also built in 1868 and later used as a wheel shop, the Car Shop Mill was erected of brick and timbers. Adjacent to it, the railroad built a paint shop, also a brick building, where cars from the car shop were painted. Nearby, in 1868, the railroad built a blacksmith shop, in later years used as a rod shop, a welding shop, a machine shop, and to house a repair gang. A car machine shop built in 1888 later served as a locomotive wheel shop annex. A car shop built in 1872 served during the 1980s as a rotating shop and air room. In this building, mechanics worked until recently on electric motors and generators of diesel-electric locomotives, and locomotive airbrake equipment.

The railroad built the Passenger Car Truck Shop in 1888 as an extension of the Car Shop; it may have incorporated a hayloft for the horses once used to move the original car transfer table adjacent to the building between 1872 and 1895. In 1873, the railroad erected a new paint shop, which it enlarged in 1892 and later used as a car shop.

At the western edge of the complex, the railroad in 1888 tore down its 1872 boiler shop in order to install a second transfer table, and built along its west side a truly massive new boiler shop. This is the building, largely of corrugated metal exterior on a massive timber frame, whose clerestory today carries in large letters on its west side the designation "SACRAMENTO LOCOMOTIVE WORKS."

These are some of the key historic buildings which constitute the shop complex today, although there are others: the stores building, to the northeast; the sawmill and planing mill, farther east; a number of buildings along the south edge of the complex; and various historic buildings interspersed among those already mentioned. The whole complex consists of 198 acres and 30 major buildings. As late as 1953, the shops employed 4,130 people, including 947 machinists, 233 boilermakers, 353 blacksmiths,

323 sheet metal workers, and 1,382 carmen. The whole atmosphere and feel of the shop complex is that of late-19th- and early-20th-century industry. While machinery has come and gone, and the shops dealt in later years with diesel-electric and even diesel-hydraulic locomotives, the buildings themselves did not experience much change. It is as if, architecturally at least, the complex had frozen in time.

But, without some intervention now, this resource which has potential for National Historic Landmark status will largely be gone unless the case can be made for its preservation and adaptive use rather than demolition.

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Photos by the author.

Robert A. Rowe

Pardon Me Boys, Is That the Naval Ordnance Choo-Choo?

Located in northern San Diego County, California, the Naval Ordnance Center, Pacific Division, Fallbrook Detachment's railroad system played several key roles in the development of the area and in the Allied victory in the Pacific during World War II. The contributions of this small railroad line are just coming to light, and were in danger of being erased completely.

Homesteading in the Fallbrook area began in the 1870s. The initial impetus for the development of what would become the town of Fallbrook was the arrival of the California Southern Railroad in 1882. Fallbrook Station was located on the southern bank of the Rio Santa Margarita, whereas the town itself was established on the high ground to the south. The Rio Santa Margarita has a long history of violent flooding episodes; sections of the Fallbrook line were erased four times between 1882 and 1916 due to massive flooding. The abandonment of the line through Temecula Canyon in 1891 and the loss of the transcontinental connection were major setbacks of the community, which as late as 1915 continued to press the State Railroad Commission to force the Atchison, Topeka and Santa Fe Railroad (AT&SF) to rebuild the line.

The Temecula cut-off was never restored, but the following year another major flood wiped out the remaining branch line, and, by 1917, Fallbrook at least had a better branch route that ran directly into town. This route enabled the community to export a variety of goods: olives, citrus and deciduous fruits, vegetables, honey, and poultry. In addition, a cannery was built in 1920. Throughout the next two decades, the Fallbrook Branch, which linked local products to markets, was a critical factor in the area's development.

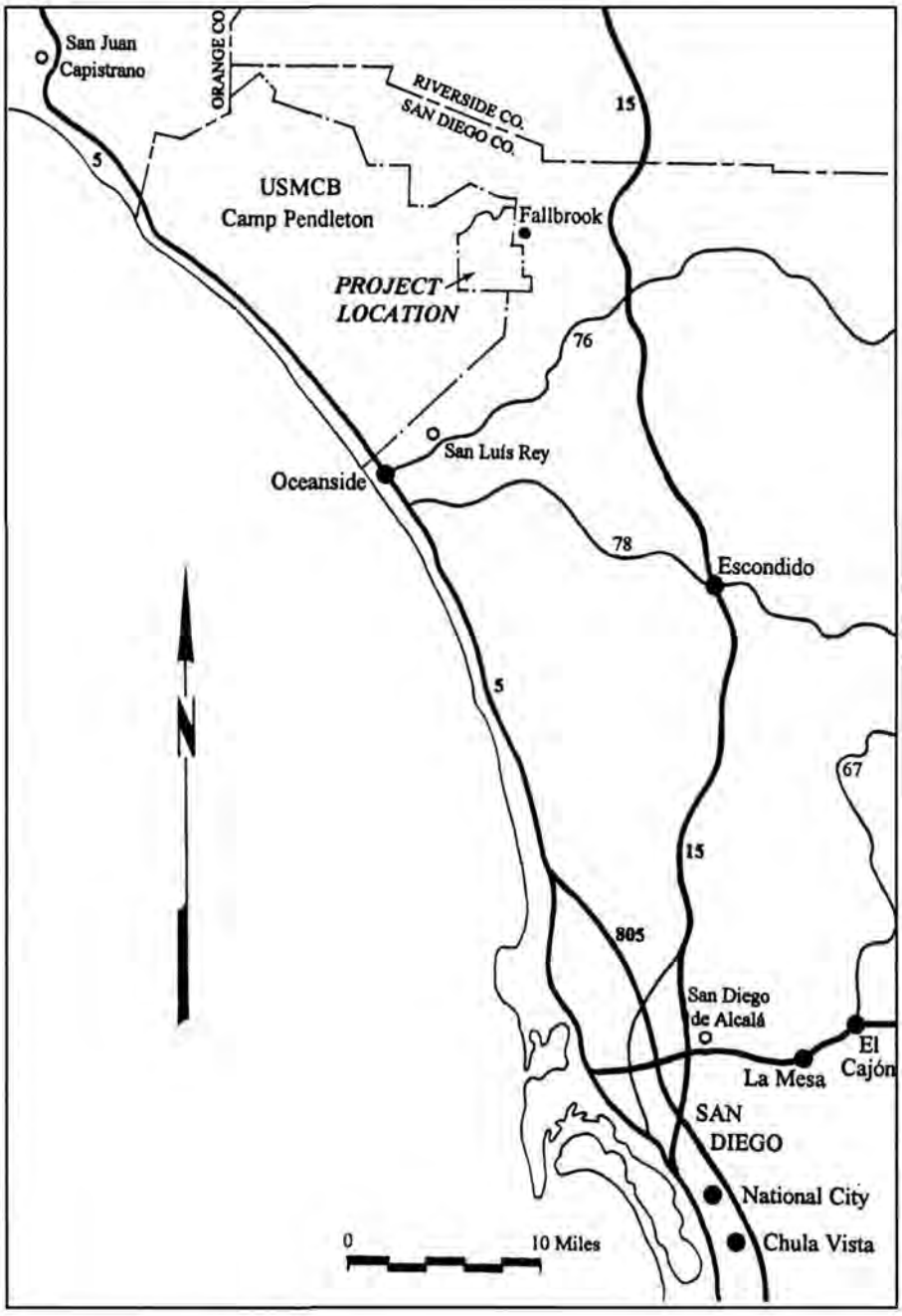
In 1940, when the eastern portion of the Rancho Santa Margarita Land Grant was selected

as the site of the U.S. Navy's new ammunition depot, the presence of the AT&SF Fallbrook Branch was a key factor, because rail transport was considered essential. The initial contract for the depot required, in addition to 77 magazines and various support facilities, a locomotive shed and a standard gauge railway system for side-tracking, sorting, and routing freight cars to the magazines and a transfer depot. As construction progressed, the depot was required to have a large quantity of diverse material on hand at all times. Shipments into the depot were by rail transport, as were shipments from the depot of explosives; motor transport was used for other deliveries. The depot and its rail system were used to support the Navy's mission on the West Coast during World War II, a mission that ranged from supplying ammunition for coastal defense to supporting the large operations in the Pacific theater. By the end of 1945, the U.S. Navy had constructed 171 magazines and 19.5 miles of rail routes.

The Fallbrook Detachment discontinued use of the railway route in 1993 when, once again, a flooding Rio Santa Margarita wreaked havoc on the line. At that time, the Detachment initiated the dismantling of the tracks so that the rails and ties could be sold for recycling. More than three-quarters of the rail and a third of the ties had been removed when the detachment was notified by the California State Historic Preservation Office that the railway routes constituted a historic property, as Segment C of CA-Sdi-14005H, a linear historic site. Segment C had been included in the historical and architectural evaluation of the detachment as part of the proposed Fallbrook Detachment Historic District, which appears to be eligible for the National Register of Historic Places (NRHP).

Because dismantling the tracks could be considered to have an adverse effect on the property, the Fallbrook Detachment decided that a comprehensive inventory and evaluation was required in order to determine the property's eligibility. The purpose of this project was to inventory the property, evaluate the significance and integrity of the property for eligibility, and provide recommendations for mitigation and management of the property.

Within a 50-foot right-of-way, 25 miles of railway routes were subjected to an intensive pedestrian survey. In addition to the fieldwork, historic photographs were viewed so that the property's historic appearance could be documented. During the survey, 27 contributing components of the property were identified and recorded; these include 10 railway features, one railway feature type, and 14 individually designated railway routes within the system. One major resource element associated with the property, the remains of an AT&SF railway section headquarters,



Location of project area in southern California. Courtesy Aztlan Archaeology.

was identified and recorded as a separate archeological property. Also identified, as a contributing property, was a wooden trestle bridging a large drainage. The ties on the trestle all have date nails from 1936. Below this trestle are the remains of posts from the original trestle that was constructed in 1916. A large concrete structure, identified as a huge set of scales, was discovered beneath the rails in the ammunition area of the tracks. The outgoing freight cars could carry more weight than the tracks could bear, so each car had to be weighed individually to ensure that the train would not exceed the capacity of the rails.

With regard to the basic components of rails and ties, the remaining rails, mostly 90-pound, date from the 1910s, 1920s and 1930s and were manufactured by the Colorado Fuel and Iron Corporation in Pueblo. Tie dimensions are six by nine inches by eight feet long; this size tie is now used only on older branch lines. All of the rails, except for those in pavement, have been removed. Eighty percent of the ties remain in place, although some disturbance occurred when the rails were removed.

The survey confirmed the property's significance and found that, although the dismantling of the tracks did constitute an adverse effect, the property has retained sufficient integrity to appear to be eligible for the NRHP as a significant contributor to the proposed historic district. The recommendations for mitigation proscribed further removal of rails and ties to avoid further disturbance of the railway routes.

Even though paved roads and trucks have replaced the Fallbrook Detachment Railway system, its memory lives on in the Fallbrook Community. After being recognized by the U.S. Navy as a site that needed to be studied, preserved, and added to the historic district, the future of the remains of this small and relatively unknown chapter of U.S. Naval history seems secure for now.

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Sam Tamburro

The Valley Railway

A Tale of Two Landscapes

The Cuyahoga Valley Scenic Railroad (historically known as the Valley Railway) bisects the 22 miles of the Cuyahoga Valley National Recreation Area (CVNRA) in northeastern Ohio. The railroad is an important component of the rich and multi-faceted cultural landscape of the CVNRA because it combines the agricultural and industrial heritage of the Cuyahoga Valley. The vistas of the valley and the built resources associated with the railroad's period of significance (1870-1920) merge to create a "layered" cultural landscape.

Due to its high degree of historic integrity, the northern section of the Valley Railway, from Independence, Ohio, to Akron, Ohio, is listed in the National Register of Historic Places (1984). As the nomination argues, the line was never double-tracked for expanded traffic and the right-of-way remains virtually unaltered. Within the CVNRA's boundaries, the Valley Railway also traverses four National Register Historic Districts and is a contributing resource in all four.

The CVNRA staff is currently in the process of preparing a Cultural Landscape Report for the Valley Railway. Research findings suggest that the "common" landscape of the Valley Railway extended beyond the immediate track grade to include adjacent buildings and distant views. In other words, what passengers were able to view from rail car windows during the resource's period of significance must be considered part of the cultural landscape. As a result, the Valley Railway's cultural landscape can be best described as "zones" of broad pastoral and natural vistas with narrower sections of industrial resources in close proximity to the tracks. Moreover, at crossing points between county roads and the railroad line, crossroad commer-

cialism characterizes the landscape, demonstrating the economic nexus that once existed between valley communities and the railroad.

Although Ohio's railroad building boom occurred in the 1850s, the Cuyahoga Valley would remain without a railroad line until the early 1870s. The Ohio & Erie Canal had served the transportation needs of the Cuyahoga Valley since 1827 and, in many ways, the canal prevented railroad expansion into the area. However, the rapid industrialization of northeast Ohio that occurred after the Civil War created a "new and infinite" need for a new railroad through the valley.

In 1869, Akron's David L. King secured a charter for the Akron & Canton Railway, which became the Valley Railway in August, 1871. King originally owned a significant amount of stock in the Cleveland, Zanesville & Cincinnati Railroad and realized the financial potential of linking the rich coalfields of Stark and Tuscarawas counties to the industrial centers of Akron and Cleveland. The proposed Valley Railway would parallel the Cuyahoga River Valley, stretching the railroad line a total of 75 miles from southeast Cleveland to Akron and then on to Canton and Valley Junction in Tuscarawas County, Ohio.

In 1890, the Baltimore & Ohio (B&O) acquired the controlling interest in the Valley Railway in order to gain important access to the Port of Cleveland. During the early 1890s, the U.S. economy suffered a severe depression that affected most railroad companies, including the Valley Railway. The line fell into receivership in 1892 and eventually declared bankruptcy in 1895. A reorganized company, the Cleveland Terminal & Valley (CT&V) Railroad, also under the control of the B&O, acquired the Valley Railway's assets in 1895 and began to make improvements to the system. By 1915, the B&O completely controlled the CT&V.

During the 1920s, traffic on the railroad began to decline as new forms of transportation, such as automobiles and buses, provided new competition. Route traffic revived briefly during World War II, but steadily declined afterward. In January 1963, passenger service on the Valley Railway ceased entirely. In 1985, CSX Transportation abandoned the line and, by 1987, the National Park Service purchased 26 miles of the track. Since 1975, the Cuyahoga Valley Scenic Railroad, a nonprofit corporation, has operated the line to provide scenic railroad excursions through the valley.

From its beginning, the Valley Railway has been recognized for its scenic landscape. Nearly all of the initial advertisements for the Valley Railway emphasized the pastoral and natural landscapes between Cleveland and Akron that were visible from the railroad. Furthermore, passengers were encouraged to take "day trips" to the country to escape their urban environment. However, by the early-20th century, an industrial landscape began to extend into the valley.

Fortunately, two primary sources exist that describe the landscape of the Valley Railway at two different times during its period of significance: John S. Reese's *Guide Book for the Tourist and Traveler over the Valley Railway* (1880), and the 1920 Interstate Commerce Commission's *Valuation Records.*

Reese's guidebook provides a "snapshot" of the Valley Railway's cultural landscape in the railroad's initial year of operation. Historically speaking, the motive of the *Guide Book* is apparent: attract urban riders to the new line. Reese's work emphasizes the agricultural/pastoral landscape that dominated the Valley Railway's viewshed, as if to evoke the memories of a simpler time before the introduction of railroads and heavy industry. The *Guide Book* helped to define the elements of the Valley Railway's broad historic landscape, especially the distant viewsheds.

Historic photographs exist of several sites along the line, and historic property atlas maps have been compared to Reese's description to determine the viewshed's historic integrity. Since building development in the valley remains near the peripheries, the distant views from the railroad most likely have stayed the same. The initial landscape assessment identifies approximately 16 views and vistas that maintain moderate to high historic integrity. Even though much of the overall land patterns and views from the line are intact, they are endangered by unmanaged growth of trees and other vegetation.

Valley walls that once were harvested for lumber and fuel are now reforested. In addition, fields that were historically in agricultural production are rapidly going into succession. In 1999, approximately 450 out of 33,000 acres of park land remain in agricultural production. As the railway's Cultural Landscape Report treatment recommendations are being developed, resource management decisions will need to be made regarding the possibility of re-introducing historic views by selective clearing.

In addition to the views and vistas, the Valley Railway's structures and objects are significant components of the cultural landscape. The track grade and the placement of depots, freight houses, and other railroad buildings serve as expressions of the circulation patterns of the passenger stations, creating "footprints" on the landscape.

The built elements of the Valley Railway were evaluated by analyzing the Interstate Commerce Commission's (ICC) *Valuation Records* for the line. As a result of the Valuation Act of 1913, the ICC and railroad employees inventoried all of the buildings and other property of every railroad system in the U.S. to determine the net worth of each. The net "value" of each railroad system was used to calculate passenger and freight rates for individual railroad lines. The *Valuation Records* include building notes and site maps that provide detailed information on building size and the spatial relationship of passenger stations.

Because of the maintenance-intensive nature of a railroad operation, much of the built environment directly related to the operation of the railway has been removed or replaced since the line's period of significance. Of the nine original passenger depot areas in the valley, only two remain. However, there has been virtually no new development adjacent to the tracks on the former depot sites, and several of the structures that fronted the tracks survive today. For example, in the Village of Boston, the Cleveland-Akron Bag Company's store and its accompanying houses are extant and convey the sense of crossroad commercialism that developed near the intersection of railroad tracks and roads.

Historic photographs exist for every depot site, and when they are compared to the maps in the *Valuation Records*, it is possible to identify the historic location of each station. As the park plans to construct contemporary-but-compatible boarding shelters in areas along the line, this information will be of assistance when siting the structures and developing interpretive waysides.

Industrial resources also interplay with the Valley Railway's cultural landscape. Although the Cuyahoga Valley had limited industrial operations, the two bag factories (Cleveland-Akron Bag Company and Jaite Paper Mill) located in the area significantly affected the landscape. Both mills were founded in the early-20th century, and their factory buildings emphasized horizontal massing. The Cleveland-Akron Bag Company's factory was razed in the 1930s, and fire destroyed the Jaite Paper Mill in 1992. However, the Jaite Company Town, which consists of a cluster of four "kit" bungalows, three folk Queen Anne buildings, a passenger depot, and a freight house, is extant and communicates the close physical relationship between the industrial and railroad built resources. Jaite's proximity to the railroad tracks illustrates the synergy that existed between industry and the railroad line, and the resulting connection is a shared cultural landscape.

The primary sources that exist for the Valley Railway provide important information beyond the context of the Cultural Landscape Report. The materials contain significant interpretive possibilities. Reese's *Guide Book* allows for "visual access" to the 1880 landscape, much of which still exists. In addition, the *Valuation Records* enable an understanding of the historical context of the built environment and the physical connection between the railroad and the industrial heritage of the Cuyahoga Valley. The research could result in an interpretive train ride that focuses on the 1880 historic landscape description and explores the industrial landscape wrought by the "machine in the garden."

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Deloris Jungert Davisson

On Track through a Beautiful Country

The Lewiston Historic Live Steam Railway, a non-profit volunteer organization, is moving "full steam ahead" with its project to operate a cultural tourist train on the Camas Prairie RailNet tracks in north central Idaho. Plans call for operating a live steam locomotive, a Railroad Diesel Car (RDC), and a self-contained "Mobile Museum on the tracks" on the 272 miles of track, tunnels, trestles, and bridges. The tracks traverse rugged mountainous terrain and rich prairie land, much of which lies within the boundary of the Nez Perce Indian Reservation. The tracks follow the route of Lewis and Clark, who trekked north and west along the Clearwater River some 200 years ago on their Corps of Discovery. At Spalding, the tracks run through the grounds of the Nez Perce National Historical Park.

The Mobile Museum and live steam locomotive's future headquarters will be Lewiston, Idaho. Leaving Lewiston at about 720 feet elevation, the Camas Prairie RailNet runs on tracks built and operated by competitors, the Northern Pacific (now Burlington Northern) Railroad and the Union Pacific Railroad. The first RailNet subdivision leaves Lewiston moving east 11 miles to the old Joseph station at Spalding. From Spalding, the tracks run upriver through the Clearwater Canyon to Orofino, Kamiah, Kooskia, and Stites. The second subdivision climbs over 3,000 feet from Culdesac, up Lapwai Creek Canyon, negotiating a three-percent grade, through seven tunnels and 17 bridges. Outstanding is the "Half Moon" bridge with its one million board feet of timber. From one vantage point, a person can see a lower bridge, two distant trestles and several tunnel entrances. This portion contains sharp curves, the greatest being 15 degrees. Elevation on top of the Winchester Hill reaches about 4,000 feet then drops across Camas Prairie through Craigmont, crossing Lawyer's Canyon Bridge—over 1,500 feet long and 291 feet above the streambed. The tracks leave reservation land at Cottonwood and go on another 12 miles to Grangeville.

Bridge # 40 on the Camas Prairie Railroad's Spalding-Grangeville branch line. Photo by C. Douglas Smith courtesy Smith & Smith, Inc.

The area, historic and present-day homeland of the NiMiPoo Nez Perce, saw an influx of Europeans after members of the Lewis and Clark Corps of Discovery traveled the Clearwater River in September, 1805, and June, 1806. The missions at Lapwai, Kamiah, and Slickpoo, and especially the discovery of gold in the Orofino hills, created immigration interest in the area. It was not until the Nez Perce Reservation was defined in 1855, redefined in 1863, and after Old Joseph died, that white settlers, lumbermen, and ranchers moved into the valleys in ever-increasing numbers. After the Nez Perce Indian War of 1877, the Nez Perce were moved to reservation land. The Allotment Act of the 1890s enabled the sale of "unalloted" Indian lands to settlers, thus permitting the establishment of homesteads, villages and towns. Lumbermen, ranchers and farmers sought a way to ship out cherries, wool, timber, cattle, and grain. Laying the tracks for the Camas Prairie Railroad followed. The Camas Prairie Railroad continued to serve the area with passenger service through the 1960s and still serves a declining timber and agricultural economy with freight hauling.

The tracks offer spectacular views from the bridges, and trestles. One can watch freight trains crossing Bridge #40, an all-timber structure which is 493 feet long. At Cottonwood, grain elevators and wooden trestles overshadow the town.

As the bicentennial of the Lewis and Clark Corps of Discovery approaches, the area is turning its attention to the use of the railroad as a cultural resource. A train ride on the Mobile Museum will interpret the natural and cultural resources of the region. Visitors will learn of Nez Perce and settlers' traditions: hunting deer, elk, moose and wild fowl; and fishing for salmon and sturgeon.

The train tracks run through groves of native trees along the Clearwater River, uplands of sagebrush, and riparian areas rich in plants and wildlife, many of which Meriwether Lewis documented and recorded with drawings and notes on the return trip of the Corps in June 1806. Today, visitors find the same flora and fauna, albeit invaded by exotic yellow-star thistle, knapweed, and cheat grass.

The train will make a stop at the Nez Perce National Historical Park's Visitor Center, where one can see a film on the culture and history of the Nez Perce people. There are also exhibits that include women's hats of woven dogbane hemp, beaded clothing, native dried foods, and information on how to make a flute.

The Mobile Museum of the Lewiston Historic Live Steam Railway Company will run regularly to the park's visitor center for an orientation on area cultural history. A brochure covers 38 park sites, many of which are visible from the train tracks. At the visitor center, scholars have access to archival materials pertaining to the history and resources of the area.

The cultural tourists will ride the Mobile Museum train to the park site at Kamiah to see the Nez Perce creation story site, "The Heart of the Monster." Kamiah was built on land purchased in 1905, after the allotment, from the estate of Allen Lawyer, a Nez Perce. Visitors will see the 19th-century Kate and Sue McBeth mission house as well as the Nez Perce Presbyterian Church.

The Lewiston Historic Live Steam Railway Company (LHLSRC) has had a dream since it began, in 1984, to plan for the restoration of a cultural tourism train running on the tracks and a railway museum engine house at the foot of Fifth and Railway streets in Lewiston. Funding from foundations and members, as well as visitors' fees, will finance this cultural and educational venture. Working on enrichment projects with area schools, the LHLSRC's project will offer a program through use of its Mobile Museum to teach youth further appreciation of their heritage.

During the first half of the 20th century, Idaho's Camas Prairie "Railroad on Stilts" was the integral transportation nerve connecting people with the natural, cultural, and economic resources of the region. It can again serve that function.

Deloris Jungert Davisson, a retired college professor, volunteers at the Nez Perce National Historical Park archives in Spalding, Idaho, and writes grants for the Lewiston Historic Live Steam Railroad Company in Lewiston, Idaho.

For further information about this project contact C. D. Smith, Chairman of the Board of Directors of the Lewiston Historic Live Steam Railway Company, 610 1/2 Main Street, Lewiston, Idaho 83501, or email <ontrack@valinet.net> or <cdsmith@lewiston.com>. For information about Nez Perce National Historical Park, write Route 1, Box 100, Spalding, Idaho 83540.

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