

GOLDEN SPIKE N. H. S.

The National Survey
of
Historic Sites and Buildings

Special Report

on

PROMONTORY SUMMIT, UTAH
(Golden Spike National Historic Site)

by

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PREFACE

Meeting at Grand Canyon in October 1959, the Advisory Board on National Parks, Historic Sites, Buildings and Monuments adopted a resolution recommending that favorable consideration be given to adding Promontory Summit, Utah, to the National Park System. Here, on May 10, 1869, the last spike was driven in the Pacific Railroad. The area is now a National Historic Site in non-federal ownership. It is owned by the Southern Pacific Railroad, and administered under a cooperative agreement between this company, the Golden Spike Association, the State of Utah, and the National Park Service.

By memorandum of November 24, 1959, Associate Director E. T. Scoyen asked the Regional Director, Region Three, to prepare a detailed historical report on Promontory Summit and, following its review in Washington, a boundary and feasibility study. This report is submitted in response to the first requirement of Mr. Scoyen's memorandum.

Parts I and II deal with the broad story of the Pacific Railroad and are included because they provide background necessary for a complete understanding of events and sites at Promontory. Part III gives detailed attention to the construction story in the Promontory Mountains, where a true appreciation of the historic remains depends on a knowledge of the events related

to them. This part is based on documentary research in the Stanford University Library, the Bancroft Library, and the collections of the Southern Pacific Railroad in San Francisco; and on a field investigation at Promontory Summit. My conclusions and recommendations are set forth in the appendix.

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TABLE OF CONTENTS

	<u>Page</u>
PREFACE.	1
PART I: ORIGINS OF THE PACIFIC RAILROAD	1
Significance of the Pacific Railroad	1
Sentiment for a Pacific Railroad.	6
Organization of the Central Pacific	9
The Act of 1862	10
Organization of the Union Pacific	12
The Act of 1864	13
PART II: BUILDING THE PACIFIC RAILROAD.	16
The Builders	16
The Construction Companies.	19
Methods of Construction	23
Progress of the Central Pacific	28
Progress of the Union Pacific	31
PART III: THE DASH TO PROMONTORY.	36
The Great Railroad Race	36
Climbing the Promontory	42
The Last Month	51
Driving the Last Spike	60
Promontory After May 10	69
BIBLIOGRAPHY.	75
APPENDIX: Conclusions and Recommendations	79
- - - - -	
MAPS.	following page 82
<ul style="list-style-type: none"> The First Transcontinental Railroad (frontpiece) Promontory Summit, Vicinity Map Route of the Railroad Through the Promontory Mountains Ascent of the East Slope of the Promontory Mountains 	
ILLUSTRATIONS.	following maps
<ul style="list-style-type: none"> 1. Central Pacific Construction Camp at Camp Victory, April 28, 1869. 	

2. U.P. and C.P. Locomotives at Promontory, May 7, 1869.
3. The U.P.'s "Big Trestle."
4. The Gap in the Rails, May 10, 1869
5. Promontory in 1869.
6. Last Spike Ceremony, May 10, 1869.
7. U.P. Officials in Front of No. 119 at Promontory, May 10, 1869.
8. The Last Spike Ceremony from Cab of No. 119.
9. Promontory in 1869.
10. U.P. Grade Ascending East Slope of Promontory Mountains.
11. Carmichael's Cut and C.P. Fill on East Slope.
12. Typical Rock Cut.
13. Parallel Grades and Cuts on East Slope.
14. Rock Cut South of Big Fill.
15. C.P.'s Big Fill.
16. U.P. Rock Cut.
17. Last Spike Monument.
18. The Gold Spike (back cover)

PART I

ORIGINS OF THE PACIFIC RAILROAD

Within a matter of months after introduction of the first steam locomotive to the United States, far-sighted men conceived the idea of a railroad from the Atlantic to the Pacific. During several decades of debate on the subject, a railroad network spread over the East and the Midwest to the Mississippi River. A railroad to connect this network with the West Coast became a great public issue in the mid-19th century. Those who advocated the road appreciated its necessity and clearly foresaw its immediate benefits to the nation. But only a few, and they but vaguely, understood the vast influence the Pacific Railroad would have upon the continental development of the United States.

The Significance of the Pacific Railroad

In 1850 the Committee on Roads and Canals of the House of Representatives succinctly stated the motives of the great segment of public opinion that championed the building of a railroad to the Pacific Coast. Such a road, said the Committee, would "cement the commercial, social, and political relations of the East and the West," and would be a "highway over which will pass the commerce of Europe and Asia."¹

1. Henry K. White, History of the Union Pacific Railway, Economic Studies of the University of Chicago (Chicago, 1895), 7. This discussion of motives is drawn from ibid., 3-12, 69-73; and from H. H. Bancroft, History of California, VII (XXIV of Works) (San Francisco, 1890), 532; Robert R. Russel, "The Pacific Railway Issue in Politics Prior to the Civil War," Mississippi Valley Historical Review, XII, 2 (September, 1925), 187-201; Robert S. Cotterill, "Early Agitation for a Pacific Railway, 1845-1850," ibid., V, 4 (March, 1919), 396-414.

Proponents of a Pacific Railroad based their arguments, first, on its commercial importance. The settlement of the Oregon question in 1846, the discovery of gold in California in 1848, and the admission of California to statehood in 1850 swelled the population of the Pacific Coast. With commerce almost wholly dependent upon the long, slow journey around Cape Horn or across the Isthmus of Panama, both East and West foresaw a large and lucrative trade speeding by rail across the continent. Even more important, the promoters confidently predicted that a Pacific Railroad would divert much of the trade between Europe and Asia from ship to rail. "The real objective point," recalled the Union Pacific's Sidney Dillon, "continued to be China and Japan and the Asiatic trade."²

The commercial motive remained dominant from first to last, but there were other considerations that carried more influence with Congress. These led the national lawmakers to reverse deeply rooted principles of American government and throw the weight of the United States, both moral and material, behind the project. The railroad would hasten the final subjugation of the American Indians. It would enormously reduce the expense to the United States of transporting mail and government supplies and greatly speed their delivery. With the outbreak of the Civil War, two more reasons

2. Sidney Dillon, "Historic Moments: Driving the Last Spike of the Union Pacific," Scribner's Magazine, XII, 2 (August, 1892), 254.

became apparent. Political bonds between California and the Union had to be strengthened in order to counter the threat of secession. And the Trent Affair, which brought the United States close to war with England, dramatized the defenseless condition of the Pacific Coast. Rapid transcontinental transportation was a necessary ingredient in the solution to both problems.

With one exception the Pacific Railroad confirmed the expectations of its advocates and justified the participation of the United States Government. Politically, the Act of 1862 strengthened the loyal element in California, and the completed railroad undoubtedly insured (if insurance were needed) the continued allegiance of the Pacific Coast to the United States. Militarily, the railroad (more accurately, the railroad network that developed between 1869 and 1884) provided the key to conquering the Indians, and the means of considerably improving coastal defenses on the Pacific. It also furnished quicker and cheaper transportation of government supplies and the mail. Commercially, it permitted a vast and profitable trade to develop between East and West. Only in their confident assurance of a huge trade with Asia, the principal motive, were the promoters of the Pacific Railroad disappointed. In November 1869, six months after the golden spike ceremony, the first ship steamed through the Suez Canal and destroyed this hope forever.³

3. Leland Stanford told the Pacific Railway Commission in 1887: "We were very busy building our road and we had not taken much account of what was going on in the matter of the construction of the Suez Canal. I think the whole country anticipated that when this road was built there would be a great business with Asia, but the opening of the Suez Canal during the very season that we completed our road disappointed us in that anticipated business." Quoted in George T. Clark, Leland Stanford (Stanford, 1931), 231-32.

Aside from this contemporary significance, there was a larger and more profound significance which the projectors of the Pacific Railroad only dimly perceived. The Union Pacific and Central Pacific decreed the end of the continental frontier. They did not, as writers occasionally generalize, destroy the frontier. "From a narrow strip across the plains," said Frederick L. Paxson, "Indians had been pushed to one side and another and a single track had crossed the mountains, but north and south great areas remained untouched, for the demolition of the frontier had only just begun." Nevertheless, "In the history of the frontier the Union Pacific Railway marks the beginning of the end."⁴ The end did not come until after completion, in 1882-1884, of the other transcontinental railroads, and then as a result of the collective influence of all. But the Central Pacific and Union Pacific established the process by which the end was attained.

This process had two stages. First, the railroad pierced the Indian barrier and gradually ate into it on either side of the right-of-way. Next it brought in its wake immigration, settlement, and development of industry and agriculture. The frontier inevitably disappeared. Settlement of the plains and mountains had been entirely unforeseen by the builders of the first Pacific

4. Frederick L. Paxson, "The Pacific Railroads and the Disappearance of the Frontier in America," Annual Report of the American Historical Association, 1907 (2 v., Washington, 1908), I, 110.

Railroad, who wished only to bridge the "Great American Desert" and tap the commerce of Asia. But way business came to furnish the bulk of traffic on the transcontinental railroads, and tempered the disappointment over failure to capture the Asiatic trade.⁵

Frederick Jackson Turner's famous frontier thesis, advanced in 1893, noted an essential difference between the Midwestern and Far Western frontiers of the United States and the determining role in this difference played by the railroad: "The frontier reached by the Pacific Railroad, surveyed into rectangles, guarded by the United States Army, and recruited by the daily immigrant ship, moved forward at a swifter pace and in a different way than the frontier reached by the birch canoe or the pack horse."⁶ Frederick L. Paxson, Turner's leading desciple, carried this thinking a step farther: "The effort that finally destroyed the continental frontier differed from all earlier movements in the same direction in that it was self-conscious, deliberate, and national."⁷ After 40 years of controversy the principle of Federal aid to internal

5. Dillon, "Driving the Last Spike," 253-54, calls attention to this, remarking that, in 1891, local business accounted for 95% of the Union Pacific's total volume.

6. Frederick Jackson Turner, "The Significance of the Frontier in American History," Annual Report of the American Historical Association, 1893 (Washington, 1894), 206.

7. Paxson, "Pacific Railroads and Disappearance of the Frontier," 110.

improvements at last gained general acceptance with passage of the Act of 1862. With this measure and the amendatory legislation of 1864, Congress struck the first really effective blow at the frontier. And while the first transcontinental railroad was under construction, Congress insured the complete collapse of the frontier by legislating aid to the Northern Pacific, Atlantic and Pacific, Texas Pacific, and Southern Pacific.

Thus the paramount historical significance of the first transcontinental railroad lies in its effect upon the Far Western frontier. It made the first serious and permanent breach in the frontier, and established the process by which the entire frontier was to be demolished. As the site where the Central Pacific and Union Pacific united to inaugurate cross-country rail travel, Promontory Summit best illustrates the historical meaning, as well as the dramatic construction story, of the first transcontinental railroad.

Early Sentiment for a Pacific Railroad

Despite virtually unanimous public sentiment for a Pacific Railroad, almost four decades of debate and discussion, liberally dosed with meaningless oratory, preceded the driving of the last spike. As early as 1832, three years after the successful run of George Stephenson's locomotive, an Ann Arbor newspaper, The Emigrant, issued the first call for a railroad to the Pacific. The idea spread, and in 1836 John Plumb, civil engineer of Dubuque, Iowa, held a

public meeting to discuss such a project--the first of uncounted meetings to be called throughout the country in the next 25 years.⁸

During the decade of the 1840's the widely publicized western explorations of John C. Fremont and the stirring events of the Mexican War focused attention on the West and helped to popularize the idea of a transcontinental railroad. Equally effective were the promotional activities of Asa Whitney, a New York merchant in the China trade whose obsession was a railroad to the Pacific. He wrote articles, lectured constantly, and expounded his views to the foremost public figures of the day. He conceived the first definite plan for a road and, worked out to the last detail, laid it before Congress with the endorsement of 16 state legislatures and numerous public conventions and boards of trade all over the country.⁹

Although Congress failed to sanction his plan, Whitney had talked the Pacific Railroad into one of the great public issues of the day. Throughout the 1850's numerous railroad conventions were held at major cities of the East and one at San Francisco. Leading statesmen--John C. Calhoun, Jefferson Davis, Stephen A. Douglas, and others--declared their support. Both the Republican and Democratic Parties wrote the Pacific Railroad into their platforms, although the

8. White, History of the Union Pacific, 2-3.

9. Most railroad histories deal with Whitney's activities, but see especially Margaret L. Brown, "Asa Whitney and his Pacific Railroad Campaign," Mississippi Valley Historical Review, XX, 2 (September, 1933), 209-224.

Democrats, still skeptical of Federal participation in internal improvement, made government aid contingent on its constitutionality. The project inspired such enthusiasm that Senator Andrew P. Butler of South Carolina was moved to complain: "It was said of the Nile that it was a god. I think that this Pacific railroad project comes nearer being the subject of deification than anything else I have ever heard of in the Senate. Everyone is trying to show his zeal in worshiping this great road."¹⁰

Politicians might agree on the necessity for a Pacific Railroad and on the impossibility of constructing one without Federal aid, yet each year legislation introduced in Congress to accomplish this objective came to grief. The lawmakers could not agree on an eastern terminus, for the section that captured the terminus would gain benefits of immense political consequence to the conflict between North and South. Aside from political considerations, congressmen knew almost nothing of the comparative merits of the possible routes across the country. To remedy this, they appropriated money in 1853 to enable the Army Engineers "to ascertain the most practicable and economical route for a railroad from the Mississippi River to the Pacific Ocean."

10. Quoted in John P. Davis, The Union Pacific Railway: A Study in Railway Politics, History, and Economics (Chicago, 1894), 137. See also Russel, "Pacific Railway Issue;" Cotterill, "Early Agitation for a Pacific Railroad;" and White, History of the Union Pacific, 7-12.

Between 1853 and 1855 the Engineers surveyed two northern and two southern routes. They discovered that a railroad could be built on any one of the four, although the 32nd parallel, along which the Southern Pacific later built, would be the least expensive. This route was, of course, as politically objectionable to Northerners as were the northern routes to Southerners. The Pacific Railway Surveys thus failed to resolve the issue, and the principal result was a set of handsomely illustrated volumes that contributed enormously to knowledge of the American West.¹¹

Organization of the Central Pacific

While congressmen debated in the immediate pre-war years, a handful of Californians acted. An engineer of the Sacramento Valley Railroad, Theodore D. Judah, became obsessed with the idea of a transcontinental railroad. Like Whitney before him, Judah lobbied with politicians, merchants, and financiers, both in Washington and in his home state. Making little headway, he took to the field in the summer of 1860 to locate a line through the formidable Sierra Nevada Mountains. With preliminary data indicating the feasibility of Donner Pass, Judah set out to enlist capital. San Francisco gave him a cool reception, and he turned to Sacramento.

11. George L. Albright, Official Explorations for Pacific Railroads, 1853-1855, University of California Publications in History (Berkeley, 1921).

In the capital city Judah infected four merchants of modest fortune with his enthusiasm. Leland Stanford, Collis P. Huntington, Mark Hopkins, and Charles Crocker were convinced that a transcontinental railroad could be built and that its builders would become rich and famous. But more immediate advantages interested them at the moment. Not only did the prospect of Federal aid appear brighter than ever in the spring of 1861, but immense profits seemed assured to the railroad that tapped the Nevada mining towns burgeoning on the eastern slope of the Sierras. On June 28, 1861, these men incorporated. under the laws of California, the Central Pacific Railroad Company of California.¹²

As Chief Engineer of the Central Pacific, Judah went again to the mountains for the summer. In October 1861 he set out once more for Washington, this time with a briefcase full of maps, profiles, and definite plans.

The Act of 1862

During the winter of 1861-62 Judah worked tirelessly for legislation to aid the Pacific Railroad. So did a group of eastern promoters who hoped to build west from the Missouri River. President Lincoln, convinced not only of the military benefits of the road but also of its necessity for binding the Pacific Coast to the

12. These paragraphs are drawn mainly from Clark, Leland Stanford, 167-84; and Robert E. Riegel, The Story of the Western Railroads (New York, 1926), 87-88.

Union, strongly supported the campaign.¹³ With no prospect of a southern route being adopted and with no Southerners to oppose a northern route, senators and representatives had little difficulty agreeing on the terms of an acceptable bill. During May and June 1862 such a bill successfully made its way through both houses of Congress, and on July 1 received the President's signature.¹⁴

The Act of 1862 threw the support of the United States Government behind the transcontinental railroad. The Central Pacific, chartered by California to build from Sacramento to the state line, was to construct the western portion of the Pacific Railroad. As the eastern portion lay entirely across land subject to Federal jurisdiction, the Act chartered the Union Pacific Railroad Company, the first corporation chartered by the National Government since the Second United States Bank. The Union Pacific was to build from the Missouri River (Congress fixed the latitude and the President named Omaha the terminus) to the California line.

Government aid took the form of land grants and subsidies. The road was to have a 400-foot right-of-way through the public domain plus ten sections of land for every mile of track. These

13. Grenville M. Dodge, How We Built the Union Pacific Railroad, Senate Ex. Doc. No. 447, 61st Cong., 1st sess. (Washington, 1910), 9, stated that "there is no doubt but what the sentiment that the building of the railroad would hold the Union together gave it the name of Union Pacific." Other writers advance different theories.

14. This act and the Act of 1864, discussed later, are reproduced in White, History of the Union Pacific, App. I, 101 ff.

were alternate sections, five out of every ten on each side of the track, or one-half the land in a belt 20 miles wide. For each mile of track completed, moreover, the companies were to receive 6%, 30-year United States bonds, principal and interest repayable at maturity, which were to constitute a first mortgage on the railroad. The bond subsidy was fixed at \$16,000 a mile in level country, \$32,000 a mile in the foothills, and \$48,000 a mile in the mountains.

Organization of the Union Pacific

The Act of 1862 also named 163 men, 25 of whom constituted a quorum, to form the Board of Commissioners of the Union Pacific Railroad and Telegraph Company. These men were to work out a provisional organization of the company. When \$2 million had been subscribed to Union Pacific capital stock and 10% of this amount paid in cash to the treasury, the provisional officers were to give way to permanent officers.

A quorum of commissioners met at Chicago on September 2, 1862, and elected provisional officers. Within a year the requisite stock had been subscribed and 10% in cash paid to the treasury. In October 1863, therefore, the stockholders gathered to form a permanent organization. They chose 30 directors (two, increased to five by the Act of 1864, were government directors appointed by the Secretary of the Interior) and elected officers: Maj. Gen.

John A. Dix president, Thomas C. Durant vice president, Henry V. Poor secretary, and John J. Cisco treasurer. General Dix never took office, and until 1869 Vice President Durant guided the affairs of the Union Pacific. Its duty finished, the government commission dissolved.¹⁵

The Act of 1864

Impressive ceremonies--more impressive than those six years later at the driving of the last spike--launched the two railroads. The Central Pacific broke ground at Sacramento on January 8, 1863, the Union Pacific at Omaha on December 2, 1863.

Neither road made much progress. The war sent the price of materials soaring and made labor extremely scarce. Capital could not be enlisted, for war prosperity had produced better investments than a railroad whose first dividend obviously lay far in the future. In California the Central Pacific found itself bitterly opposed by a powerful alliance of stage, ship, freight, and telegraph companies which fought with every weapon at its command. As Republican war governor of California, however, Leland Stanford managed to bring some state financial aid to his company. With this, and by borrowing

15. Henry V. Poor, Manual of Railroads of the United States, for 1869-70 (New York, 1869), 403-404; E. L. Sabin, Building the Pacific Railroad (Philadelphia and London, 1919), 80-82.

on their personal security, the four associates pushed their rails 18 miles east of Sacramento by February 1864. But the Union Pacific did not even lay its first rail until the spring of 1865. The railroad builders, facing ruin, turned again to Congress with quite valid reasons for more government help. The Act of 1864 was the result.¹⁶

Signed by the President on July 2, 1864, this Act doubled the resources made available to the railroad by the parent legislation. Although reducing the right-of-way from 400 to 200 feet, the Act of 1864 doubled the land grant. The companies were now to receive 20 sections of land per mile--ten alternate sections on each side of the track. Of more immediate benefit, the Government relinquished its first lien on the railroad by authorizing the companies, as they received government subsidy bonds, to issue equal amounts of their own 6%, 30-year bonds. The company bonds were now to constitute a first mortgage on the road, the United States bonds a second mortgage. In addition to these major concessions, the Act contained a number of minor liberalities that made compliance with government regulations far easier than before.

The Act also permitted the Central Pacific to build 150 miles east of the California-Nevada boundary unless first it met and united with the Union Pacific. In a much quoted statement,

16. Bancroft, History of California, VII, 565-66; Riegel, Story of Western Railroads, 72-73. Sabin, Building the Pacific Railway, 55-59; and Clark, Leland Stanford, 202-213, give the story of the California opposition in detail.

C. P. Huntington later said, "150 miles ought not to have gone into the bill; but I said to Mr. Union Pacific, when I saw it, I would take that out as soon as I wanted it out."¹⁷ When he did, two years later, he fired the starting gun for the great railroad race.

The Act of 1864, as Bancroft pointed out, made the United States "virtually an endorser of the company's bonds for the full amount of its own subsidy," and now both the Union Pacific and the Central Pacific could draw upon double the amount of subsidy granted for each mile of completed road. "The financial problem has been solved," said Stanford in July 1865, "and the result is abundant financial means to press forward the work to its utmost development."¹⁸ To abundant finances, the end of the Civil War added abundant labor and material. The two companies marshalled forces for a ten-year job that would take less than four.

17. Bancroft, History of California, VII, 551.

18. Ibid., 565.

PART II

BUILDING THE PACIFIC RAILROAD

The Pacific Railroad had been the subject of discussion, debate, and oratory for so many years that, once construction actually began, it aroused the most intense interest and curiosity throughout the nation. Few people dreamed in 1865 that there would ever be more than one railroad across the continent. The expense, almost everyone agreed, would prohibit other roads. Newspapers all over the country therefore followed the progress of the road in infinite detail, and it was described in expansive terms as the eighth wonder of the world and "the great work of modern America." From 1865 to 1869 the Pacific Railroad dominated the national consciousness as did few other events.

The Builders

The men who built the Pacific Railroad rank among the most dynamic, brilliant, and resourceful of the 19th century. The key figures in each company were in management and in construction, fields requiring different talents, involving different work, and attracting different temperaments. Working together, but often in opposition, they pushed the Pacific Railroad to completion against almost overwhelming obstacles, both financial and engineering.

Composing the management of the two companies were men highly skilled in corporate finance and administration. Their techniques were those of the 1860's, employed by most of their contemporaries

in business. By today's standards, the practices of the Central Pacific and Union Pacific management were thoroughly unethical. The truly great achievement of these men has thus been tarnished by the judgment of a later generation. They were, in fact, the first victims of the revulsion against such methods that swept the country during the early 1870's.

The Big Four ran the Central Pacific. Leland Stanford served as president and handled all matters requiring state and local political influence and manipulation. Collis P. Huntington, vice president, made his headquarters in New York. He negotiated for purchase of equipment and materials, solicited investment from Eastern and European capitalists, and represented the company in Washington. Treasurer Mark Hopkins, quiet, meticulous, and clear-minded, balanced the flamboyant Stanford and Huntington. He exerted great influence over his associates, and usually saw the solution to difficult problems. Forceful and energetic, Charles Crocker was a silent partner in the management, earning his principal fame as the field man who supervised construction of the road.¹

Dominant in the Union Pacific management were Thomas C. Durant and Oakes Ames. Durant was vice president of the railroad and, until 1867, president of Credit Mobilier, the construction company that built the road. A man of tireless energy and hair-trigger temper,

1. Oscar Lewis, The Big Four (New York, 1938) is a biographical study of the associates. See also Clark, Leland Stanford.

he made enemies of almost everyone he worked with. Yet on the management level he, more than anyone, was responsible for completion of the Union Pacific. Oakes Ames, Boston shovel manufacturer and congressman from Massachusetts, came to the aid of the company in its blackest financial crisis. His vast resources kept construction going, although in the end personal bankruptcy was the result.

A bitter quarrel between Durant and Ames burdened the Union Pacific management. Durant, a speculator, wanted to make a fortune from construction and then abandon the road. Ames, the investor, was interested in building a good road as a long-term investment. Aggravated by other differences and by a personality clash, the Durant-Ames feud influenced the management of the Union Pacific throughout most of the construction period.

Other men of importance were Sidney Dillon, who succeeded Durant as president of Credit Mobilier and later became president of the Union Pacific; John Duff, director; and Oliver Ames, brother of Oakes Ames and General Dix's successor as president.²

Both railroads had very capable men in the field. With the exception of Crocker, they kept largely aloof from financial and organizational problems, devoting themselves entirely to building the railroad. As a consequence, they escaped the public condemnation that later fell upon the managers of the companies.

2. Good capsule sketches of these men appear in John D. Galloway, The First Transcontinental Railroad (New York, 1950), 175-178.

For the Central Pacific Crocker, as president of the construction company, was the driving power. He himself best summed up his role FOR ONE OF BANCROFT'S ILLUSTRATIONS: "Why, I used to get up and down that road in my car like a mad bull, stopping along wherever there was anything amiss, and raising Old Nick with the boys that were not up to time."³ Crocker's right hand man was his construction superintendent, James H. Strobridge. Chief Engineer Judah, so instrumental in forming the Central Pacific, had died in 1863. His successor, Samuel S. Montague, carried the surveys across Nevada and Utah to Green River, Wyoming, and directed all engineering from Sacramento to Promontory. His chief assistant was Lewis M. Clement.

The Union Pacific also had an able corps of field men. Chief Engineer Grenville M. Dodge supplied a drive in the field comparable to that of Durant in the front office. Samuel B. Reed served as superintendent of construction. The partnership of John S. and Dan T. Casement held the contract for tracklaying and much of the grading. These were the men who carried the rails from Omaha through to Promontory, 1,085 miles, in four years.⁴

The Construction Companies

Both the Union Pacific and the Central Pacific had to meet the same basic financial difficulty. Government bonds provided

3. Bancroft, History of California, VII, 567-68.

4. Galloway, First Transcontinental Railroad, 186-92.

only half the necessary capital, and the land grants, potentially of enormous value, supplied no ready cash. Thus construction depended heavily upon private investment. But there was no incentive to investors because a railroad through virtually uninhabited country could not be expected to return a dividend for many years and because Congress required railroad securities to be sold at par for cash. Both companies therefore resorted to a favorite device of 19th century railroad builders--a construction company with interlocking directorate free of government regulation.

The Union Pacific's construction company was the Credit Mobilier of America. In 1864 Durant bought the Pennsylvania Fiscal Agency, a corporation loosely chartered by the Pennsylvania legislature to engage in practically any kind of business, and renamed it the Credit Mobilier. The directors and principal stockholders of this company were virtually the same as those of the Union Pacific. Greatly simplified, the process worked like this. The Union Pacific awarded construction contracts to dummy individuals, who in turn assigned them to the Credit Mobilier. The Union Pacific paid the Credit Mobilier by check (i.e., cash, for the benefit of Congress), with which the Credit Mobilier purchased from the Union Pacific, at par, Union Pacific stocks and bonds, which it then sold on the open market for what they would bring. The construction contracts were written to cover the Credit Mobilier's loss on the securities and to return generous profits. In this manner the directors and principal stockholders of the Union Pacific, in their opposite role as directors

and stockholders of the Credit Mobilier, reaped large profits as the rails advanced.⁵

The Big Four used almost identically the same device to build the Central Pacific. Although continuing in practice to share in the management of the Central Pacific, Charles Crocker resigned from the directorate and formed the construction firm of Charles Crocker and Company, in which the other three associates were the only stockholders. The connection between the two companies was too obvious, and in 1867 the Big Four organized the Contract and Finance Company, with Crocker as president. To this company, acting for the Central Pacific, they awarded the contract for building the road from the California line to the junction with the Union Pacific, as well as for supplying all materials, equipment, rolling stock, and buildings. The chief advantage of the Contract and Finance Company over the Credit Mobilier, as one historian pointed out, "was that it was able to get its accounts into such shape that no one has ever been quite able to disentangle them."⁶

The Big Four carried this technique a step farther. To provide a link between San Francisco and the western terminus of the Central

5. Riegel, Story of Western Railroads, 75-76.

6. Riegel, Story of Western Railroads, 89; Harry J. Carman and Charles H. Mueller, "The Contract and Finance Company of the Central Pacific Railroad," Mississippi Valley Historical Review, XIV, 3 (December, 1926), 326-341.

Pacific at Sacramento, they bought the Western Pacific and the San Francisco Bay Railroad Company. As directors of these two railroads, they then let the contracts for building them to the Contract and Finance Company. They were completed in 1869, the same year in which the transcontinental railroad was completed.⁷

Such techniques not only pushed the railroad to completion in record time but also made its financiers extremely wealthy men. The Union Pacific cost about \$63 1/2 million to build, of which about half represented the Government's loan. The best estimate of profits is about \$16 1/2 million, although the enormity of this figure emerges only when it is understood that at no one time did the capital invested exceed \$10 million. Profits thus amounted, not to 27 1/2%, but to over 200%.⁸ The Central Pacific's figures are more difficult to arrive at, mainly because many of its books were "accidentally" destroyed by fire during the congressional investigation of Credit Mobilier. The best authority, however, places the cost of construction at \$36 million. The company received land grants and government bonds valued at \$38 1/2 million, while Stanford admitted that \$54 million in Central Pacific stock transferred to the Contract and Finance Company in payment of construction contracts represented virtually net profit.⁹

7. Carman & Mueller, "Contract and Finance Company," 335.

8. White, History of the Union Pacific, 36-37; Nelson Trotman, History of the Union Pacific: A Financial and Economic Survey (New York, 1923), 52 and note 74.

9. Carman and Mueller, "Contract and Finance Company," 336-38.

There was an inevitable reckoning. Both railroads were burdened with inflated capitalization that meant decades of high rates and operating losses. The Credit Mobilier investigation in 1872, moreover, brought to the railroads bad publicity that strained relations with the public and the Government for many years to come and produced hostile legislation. Nevertheless, almost all railroad historians, while deploring the financial bucaneeing of the Pacific Railroad builders, agree that only through such methods could the railroad have been built without far more liberal government aid.

Methods of Construction

Sordid though the financial history of the Pacific Railroad may be, it is more than balanced by the dramatic construction story, in which the field men of the two companies justly took pride. By completing a railroad across 1,775 miles of wilderness in less than four years, they set a record yet unequalled.

Both companies dealt with tremendous logistical problems. At great expense the Central Pacific had to ship by sea all equipment, tools, rolling stock, rails, bolts, and fishplates from the Atlantic Coast around Cape Horn or across the Isthmus of Panama to San Francisco. The Union Pacific, until completion of the Chicago and Northwestern to Council Bluffs in November 1867, drew its entire stock of materials and supplies from Missouri River steamers. Even ties, which the Central Pacific obtained in profusion from the Sierras, the Union Pacific had to import until its line reached the Black

Hills and the Wasatch Mountains. All material, plus supplies for the army of workers, then had to be forwarded by train from the terminus to end of track, a transportation requirement that grew heavier with each mile the rails advanced. And beyond end of track the grading crews and surveying parties had to be supplied by wagon train.¹⁰

During the first years scarcity of labor delayed construction. For the Union Pacific, the end of the Civil War solved this problem. Veterans of the Union armies, mostly Irish immigrants, flocked to Omaha to enlist in Casement's grading and track gangs. Observers rarely failed to note the military character of the Union Pacific's construction force. "General Casement's track-train could arm a thousand men at a word," recalled Chief Engineer Dodge, himself recently a major general, "and from him, as a head, down to his chief spiker, it could be commanded by experienced officers of every rank, from general to a captain. They had served five years at the front, and over half the men had shouldered a musket in many battles."¹¹

The Central Pacific, in distant California, did not enjoy this formidable labor pool. Railroad wages failed to tempt men

10. Dodge, How We Built the Union Pacific, 14-15, 22; Sabin, Building the Pacific Railway, 89-100.

11. Speech of Dodge before Society of the Army of Tennessee, Toledo, Sept. 15, 1886, quoted in Davis, Union Pacific Railway, 40-41.

who could earn more at the mines and perhaps, with luck, make a fortune. Strikes plagued the builders. Finally, in order to break a strike, Crocker sent for some Chinese coolies. They turned out to be excellent workers. "Quiet, peaceable, industrious and economical," testified Stanford. "Without them it would have been impossible to complete the western portion of this great National highway." Soon the Big Four were sending ships to China for recruits. By 1865 there were 7,000 Chinese, by 1868, 11,000. "Crocker's pets" they were called, and to them the word of "Mistuh Clockee" was law.¹²

For the Central Pacific, as has been shown, the Crocker Construction Company and later the Contract and Finance Company built the railroad, while, for the Union Pacific, the Credit Mobilier served principally as an agency for contracting construction work. The Casement brothers, as stated, received the contract for tracklaying and much of the grading. Despite these differences, the basic field organization for accomplishing the work was the same for both roads.

Far in advance, staking out the route, ranged the surveying parties--engineers, rodmen, flagmen, chainmen, axemen, teamsters, herders, and, in Indian country, a cavalry escort. They ran preliminary surveys, followed by actual location surveys. Next came the graders. Usually they prepared 100 miles of grade at a

12. Sabin, Building the Pacific Railway, 110-114, 125; Clark, Leland Stanford, 213-14.

time, on the plains in about 30 days. In the mountains it took much longer, and here the graders worked as much as 200 to 300 miles in advance of the track. Bridge, culvert, and trestle crews usually worked five to 20 miles from the railhead. The graders used pick and shovel for earth work, wheelbarrow and horse- or mule-drawn wagons for earth movement. For blasting cuts and tunnels through rock, they experimented with liquid nitroglycerine but, for the most part, used enormous quantities of black powder.¹³

Behind the graders came the tracklayers. This phase of work excited the greatest interest among spectators. A correspondent from the East described it on the Union Pacific:

A light car, drawn by a single horse, gallops up to the front with its load of rails. Two men seize the end of a rail and start forward, the rest of the gang taking hold by twos, until it is clear of the car. They come forward at a run. At the word of command the rail is dropped in its place, right side up with care, while the same process goes on at the other side of the car. Less than thirty seconds to a rail for each gang, and so four rails go down to the minute. . . . The moment the car is empty it is tipped over on the side of the track to let the next loaded car pass it, and then it is tipped back again; and it is a sight to see it go flying back for another load, propelled by a horse at full gallop at the end of 60 or 80 feet of rope, ridden by a young Jehu, who drives furiously. Close behind the first gang come the gaugers, spikers, and bolters, and a lively time they make of it. It is a grand "anvil chorus". . . . It is in triple time, three strokes to the spike. There are 10 spikes to a rail, 400 rails to a mile, 1,800 miles to San Francisco--21,000,000 times are those sledges to be swung; 21,000,000 times are they to come down with their sharp punctuation before the great work of modern America is complete.¹⁴

13. Dodge, How We Built the Union Pacific, 13-14; Galloway, First Transcontinental Railroad, 143.

14. W. A. Bell, "Pacific Railroads," Fortnightly Review, May 1869, 572-73.

At or near end of track was the base camp. It consisted of construction headquarters, tents for housing the army of workers, and acres of materials and supplies to support work at the front. As rails advanced 100 to 200 miles, the base camp moved forward to a new location. Adjacent to each camp along the line of the Union Pacific a tent city sprang up almost over night. Some survived after the base camp departed, while others died as quickly as they had been born. The Union Pacific left a trail of these towns across the country: Fremont, Kearney, North Platte, Julesburg, Sidney, Cheyenne, Laramie, Benton, Green River, Evanston, and Promontory. Until departure of base camp, they were roaring centers of fun-making and frequent homicide. The population consisted chiefly of gamblers, whiskey-peddlers, prostitutes, and criminals of every variety. Together they relieved the Irishmen of most of their wages.¹⁵

By contrast, the Central Pacific failed to give birth to the "hell on wheels" that characterized the Union Pacific railhead. The docile Chinamen did not drink and gambled only among themselves, hence were poor material for parasites. Also, while the Missouri River frontier produced every type of adventurer eager to seek fortune

15. Dodge, How We Built the Union Pacific, 31-32; Riegel, Story of Western Railroads, 84-85. A lengthy description of Benton, Wyoming, together with a relation of several nights activities there, appears in J. H. Beadle, The Undeveloped West, or Five Years in the Territories (Philadelphia, 1873), 87-99.

in the West, Californians had already come west and were content to remain. Crocker and Strobridge, moreover, "travelled a trail of law, order and determination, their wheeled town being a town, of their own, strictly limited and as far as possible whiskeyless, cardless, viceless." The towns along the Central Pacific were generally already there or not, as were the Union Pacific towns, dependent for life upon the railroad. A few such towns were Cisco, Truckee, Reno, Wadsworth, Humboldt, and Elko.¹⁶

Progress of the Central Pacific

Although the Central Pacific laid its first rail over a year before the Union Pacific, it encountered its toughest work, the crossing of the Sierra Nevada Mountains, almost immediately. In fact, basing his decision on the testimony of geological experts, President Lincoln placed the western base of the Sierras at the crossing of Arcade Creek, seven miles northeast of Sacramento. Thus, for 24 miles of easy construction west of the Sierras, the Central Pacific drew \$48,000 a mile in subsidy bonds and marketed its own bonds in like amount.¹⁷

The rails reached Newcastle, 31 miles from Sacramento, on June 6, 1864, and here the heavy work began. For the next four

16. Sabin, Building the Pacific Railway, 271-74.

17. Sabin, Building the Pacific Railway, 66-67.

years, with numerous delays produced by financial, political, topographical, and weather problems, the Central Pacific labored to surmount the Sierras. They presented enormous engineering obstacles to overcome in the face of severe weather. Deep fills, rock cuts, high trestles, snaking grades, and 15 tunnels totalling 6, 213 feet through solid granite proved necessary. To protect the track from snowslides, 37 miles of wooden snowsheds and galleries had to be built.¹⁸

Recalling some of the difficulties encountered, Construction Superintendent J. H. Strobridge testified:

During the winter of 1866 and 1867 and the following winter of 1867 and 1868 there were unusually heavy snowfalls in the upper Sierra Nevadas, . . . The tunnels were got under way with as large a force as could be used on them and the remainder of the force was sent to the Truckee Canyon on the east slope of the Sierras, where the snowfall was not so great as to entirely prevent grading during the winter, the total force being about 13,500 men at this time. The snow was so deep that it was impossible to keep the tunnel approaches clear and we were compelled to make tunnels through the snow from the dump to the tunnel entrances. Snow tunnels were also required to get into camp. In many instances our camps were carried away by snowslides, and men were buried and many of them were not found until the snow melted the next summer. In the spring of each year the men were taken back from the Truckee into the mountains and an average depth of ten or twelve feet of snow was cleared away before grading could be commenced.

The total snowfall of the season was about forty feet, and the depth of hard, settled snow in midwinter was eighteen feet on a level in Summit Valley and Donner Pass, over which we hauled on sleds track material for forty miles of railroad, three locomotives, and forty cars from Cisco to Donner Lake, where all was reloaded on wagons and hauled over miry roads to Truckee, a total

18. Galloway, First Transcontinental Railroad, 145-50, 160-61.

distance of twenty-eight miles, at enormous cost. In this way the road was forced to the east slope of the Sierra Nevadas. . . .¹⁹

The line was open to Clipper Gap, 43 miles from Sacramento, on June 10, 1865; to Colfax, 55 miles, on September 10; to Dutch Flat, 68 miles, in July 1866; and to Cisco, 94 miles, on November 9. Here end of track remained while thousands of coelies blasted in the Summit Tunnel. It was 1,659 feet long, and during the year that it stopped end of track other crews worked at grading and tracklaying on the east slope. After completion of the tunnel in August 1867 the gap quickly closed, and the first train steamed into Truckee on April 3, 1868. The tracks reached Reno, Nevada, 154 miles from Sacramento, on June 19, and Wadsworth, 189 miles, on July 22.²⁰

The Central Pacific had put the worst of the job behind it. Ahead lay the Nevada desert and conditions for rapid progress. Even so, the Union Pacific was far advanced. In May 1868 it had reached Laramie, Wyoming, 537 miles west of Omaha. It had laid 348 more miles of track than the Central, but just ahead lay the Wyoming Black Hills and, across the Wyoming Basin, the Wasatch Mountains.

19. Testimony of Strobridge before Pacific Railway Commission, 1887, quoted in Clark, Leland Stanford, 223.

20. Galloway, First Transcontinental Railroad, 160-61.

Progress of the Union Pacific

From Omaha up the Platte Valley to the Wyoming Black Hills, the Union Pacific had easy going. The level valley of the Platte River presented few engineering problems. While the Central Pacific struggled in the Sierras, the Union Pacific's grade and track advanced steadily and smoothly.

But the Union Pacific faced an obstacle that never troubled the Central Pacific, and in Nebraska it appeared in its ugliest form. The Sioux and Cheyenne Indians possessed a strength and a will to resist that the Paiutes of Nevada had long since lost. As the Union Pacific invaded their country, the dullest red man soon understood what the rails meant to the Indian's way of life. War parties swept down on surveyors, graders, and tracklayers, then vanished before pursuit could be organized. Appreciating the importance of the railroad to their own task of destroying the Indian barrier, Generals Grant and Sherman stripped the frontier for troops in order to place large forces on the line of the Union Pacific. Forts sprang up along the right-of-way--McPherson, Sedgwick, Morgan, D. A. Russell, and Sanders. Soldiers guarded the construction workers and rode with the surveyors. Graders and tracklayers worked next to stacked arms, and had orders never to run when attacked.²¹

The rails had passed Plum Creek, 200 miles west of the Missouri River, when they first aroused opposition. Indians captured and set fire to a freight train east of Plum Creek. Chief Engineer

21. Dodge, How We Built the Union Pacific, 15-16.

Dodge hastened back with a train carrying about 20 workers and his own "travelling arsenal." At the wreck his men poured off the train. "I gave the order to deploy as skirmishers and at the command they went forward as steadily and in as good order as we had seen the old soldiers climb the face of Kenesaw under fire."²²

On August 6, 1867, with railhead far out in Wyoming, the Indians again struck near Plum Creek. Chief Turkey Leg's Cheyennes descended on the railroad and, as one of the participants recalled, "we got a big stick, and just before sundown one day tied it to the rails and sat down to watch and see what would happen." First came a handcar, which struck the "big stick" and sent its six passengers flying. The Indians finished off these men, although a man named Thompson did not die. (A warrior scalped him, but dropped the scalp. Thompson retrieved it, and later, recovering from his wounds, tried unsuccessfully to grow it back in place. For years it was on display in a jar of alcohol at the Council Bluffs Public Library.) Delighted with their first success, the Cheyennes next pried up some rails. A freight train came along, ran off the track, and piled up, a mass of flames, in a ravine next to the roadbed. Another train, following the first, quickly reversed itself and backed out of the danger area. The Indians broke into the freight cars and had a grand party with the contents--barrels of whiskey, bolts of

22. Speech of Dodge before the Society of the Army of Tennessee, Toledo, Sept. 15, 1886, quoted in Davis, Union Pacific Railway, 141.

calico, ribbons, bonnets, boots, hats. All the following day, like children set free in a toy store, they indulged in an orgy of fun-making. Finally, just as the raiders were leaving, a train loaded with Maj. Frank North's battalion of Pawnee Indian scouts steamed up to the wreck and hastened the departure.²³

Ahead, in the Wyoming Basin, the road again penetrated Sioux country. Here the surveying parties, with their small cavalry escorts, bore the brunt. The worst tragedy occurred in June 1867. Three hundred Sioux warriors attacked Assistant Engineer Percy T. Browne and eight cavalrymen. Forting up on a knoll, Browne and his men held the Indians at bay until dusk, when Browne caught a bullet in the stomach. The warriors withdrew during the night, and the soldiers carried Browne on a blanket litter 15 miles to LaCledé Station of the Overland Stage Company. There he died.²⁴

The Union Pacific followed the old Oregon Trail up Nebraska's Platte Valley. It did not, however, cross the continental divide at famous South Pass. In 1865, still in uniform and campaigning against hostile Indians, General Dodge had accidentally discovered a practicable pass across the Wyoming Black Hills. Through Wyoming,

23. The most complete account of this episode, drawn from Cheyenne informants, is in George B. Grinnell, The Fighting Cheyennes (2nd ed., Norman, 1956), 263-68. See also Sabin, Building the Pacific Railway, 244-51.

24. Sabin, Building the Pacific Railway, 236-40.

therefore, the Union Pacific kept south of the Platte and the Sweetwater, thus considerably shortening the route.

In the Black Hills the Union Pacific encountered its first difficult country and began to draw \$48,000 a mile in subsidy bonds. Here, also, smoldering personal animosities reached a crisis in the summer of 1863. Consulting Engineer Silas Seymour, Vice President Durant's man at the front, changed and lengthened a location that Dodge had accepted. Durant came west to support Seymour, and probably to try forcing Dodge's resignation. But news of the trouble had reached Washington, and with Durant came Generals Ulysses S. Grant, William T. Sherman and Philip H. Sheridan, together with an array of lesser civil and military notables. During a tense conference at Fort Sanders, Dodge served notice that, if Durant or anyone else changed his line against his wishes, he would quit. Grant made it clear that the United States Government expected General Dodge to build the Union Pacific. Durant faced realities, and from then on Dodge built the road where and how he wished.²⁵

The Union Pacific kept its stride. In 1865 it had graded and bridged 100 miles and laid 40 miles of track. In 1866 it completed 265 miles of road; in 1867, 245 miles; and in 1868, 350 miles.²⁶

25. Dodge, How We Built the Union Pacific, 25-26; J. R. Perkins, Trails, Rails and War: The Life of General G. M. Dodge (Indianapolis, 1929), 220-22; Galloway, First Transcontinental Railroad, 176.

26. Poor, Manual of Railroads, 1869, 404.

In the winter of 1868-69 the rails moved into the rugged Wasatch Mountains where, on the summit and in Weber and Echo Canyons, the Union Pacific experienced on a lesser scale something of the ordeal that the Central Pacific had endured in the Sierras.

Surveying parties of both railroads pushed into the Great Salt Lake Basin. Brigham Young, powerful president of the Mormon Church, expected the rails to come through Salt Lake City. But a route around the north end of Great Salt Lake possessed decided advantages besides avoiding the treacherous salt flats west of the city. The Union Pacific chose to turn north at Ogden and follow the north shore of the lake, bypassing the Utah capital. Young was furious, and threatened to withhold the Mormon aid on which the Union Pacific had counted. However, when he discovered that the Central Pacific had also settled upon the northern route, he accepted the decision and threw the support of the church to both the Union Pacific and Central Pacific, meanwhile organizing his own Utah Central Railroad to connect Salt Lake City with Ogden.²⁷

By this time the great railroad race was in full swing. Both companies strained their resources and pushed their crews to the limit, striving for every additional mile that was humanly possible before the inevitable junction took place.

27. Dodge, How We Built the Union Pacific, 27; Perkins, Trails, Rails and War, 228-29.

PART III

THE DASH TO PROMONTORY

According to the Act of 1862 the Central Pacific was to build to the California line and there meet the Union Pacific. The Act of 1864 moved the junction 150 miles east into Nevada. These limitations on the Central Pacific, however, were more apparent than real. It seems to have been the intent of Congress throughout that the two companies should build until they met, then, wherever this might be, join their rails and form a continuous line from the Missouri River to the Pacific Coast. But at each step in the evolution of Pacific Railroad legislation, Congress found it impossible to frame the statutes with sufficient precision to prevent the companies from interpreting them to serve their own purposes. Both companies had very cogent reasons for wishing to build and operate as big a share of the Pacific Railroad as possible. And they were willing to pay a very high price to attain this goal.

The Great Railroad Race

Although the loose language of national lawmakers made possible the great railroad race, it was motivated by practical considerations far removed from the halls of Congress. Every mile of track, of course, brought its reward in subsidy bonds and land grants. But there were other compelling reasons for speed. Above all, both companies aimed for Ogden and Salt Lake City, for the railroad that

captured these Mormon cities would control the traffic of the Great Basin. If the Central Pacific won, it would carry the trade of the Great Basin over its tracks to San Francisco; if the Union Pacific won, this commerce would flow east to the Mississippi. Each contender, therefore, bent its energies towards reaching Ogden and shutting the other out of the Great Basin. Each company, moreover, bore a constantly mounting interest on the government loan and on its own securities. Although the Act of 1864 gave them until 1875 to finish the road, every day that tied up capital in construction without the offsetting returns of operation made the burden of interest heavier. The Central Pacific faced the hard reality that the line over the Sierras had been expensive to build and would be expensive to maintain and operate. Without a compensating mileage in the level country of Nevada and Utah, the railroad would be unprofitable. Finally, the surge of public interest that focused on the Pacific Railroad provided a less tangible but no less powerful incentive. Both companies were convinced that the one that built the greatest length of railroad would enjoy the greatest prestige in the eyes of the nation.¹

The Act of 1866, produced largely by the lobbying of Collis P. Huntington, cleared the way for the race. It authorized the Central Pacific to "locate, construct, and continue their road eastward, in a continuous, completed line, until they shall meet and connect with

1. White, History of the Union Pacific, 33; Perkins, Trails, Rails and War, 225-26; Clark, Leland Stanford, 220.

the Union Pacific Railroad." This act did not specify where the point of junction would be, and from president down to spikers and guagers the men of the Union Pacific and the Central Pacific set out to advance that point as far into the territory of their competitors as possible.

Two provisions in the laws of 1864 and 1866 helped. One permitted the companies to grade 300 miles ahead of end of track. The other permitted them, upon completion of acceptable grade, to draw two-thirds of the government subsidy bonds before the track had been laid.

As soon as Congress passed the Act of 1866, Chief Engineer Montague sent Central Pacific surveyors under Butler Ives to run lines north of Great Salt Lake and east of Ogden in the Wasatch Mountains. By the spring of 1868 they were working next to the flags of the Union Pacific survey near Fort Bridger, Wyoming. Dodge's Union Pacific surveyors, meanwhile, had staked out a line clear across Utah and Nevada to the California line.

During 1868 and 1869, the decisive years of rivalry, both companies put grading crews far ahead of track, the Central Pacific in the Wasatch Mountains, the Union Pacific at Humboldt Wells, Nevada. In June 1868 Leland Stanford took the stage to Salt Lake City. During the next six months he contracted with Brigham Young and other prominent Mormons to grade the line of the Central Pacific from Monument Point, on the northwest shore of Great Salt Lake,

to Echo Summit in the Wasatch Mountains.² The Union Pacific had already let a \$2 million grading contract to Brigham Young for work between Echo Summit and Promontory Summit.³

Thus, during the last half of 1868, Mormon crews worked on parallel grades in Weber Canyon, thereby deriving considerable profit from the rivalry and perhaps a measure of satisfaction at the discomfiture of the companies that had bypassed Salt Lake City. In the final reckoning, the Union Pacific and Central Pacific spent about \$1 million on 200 miles of grade that was never used. Also, since the Union Pacific in the end could meet only half of its financial obligation to the Mormons, Brigham Young obtained \$1 million in Union Pacific rolling stock to equip his own Utah Central Railroad.

By the end of 1868 the Union Pacific had finished grading to the mouth of Weber Canyon and was laying rails down Echo Canyon. The Central Pacific, its track still in eastern Nevada, had made good progress on grading between Monument Point and Ogden but had accomplished much less in Weber Canyon.⁴ Both companies forged ahead regardless of expense. Dodge later estimated that the price of forcing track

2. Stanford's letters to Hopkins, June through December 1868, cover these activities, although in somewhat less detail than desirable for clarity. Reprinted in Clark, Leland Stanford, 245-67.

3. Sabin, Building the Pacific Railway, 180.

4. Stanford's letters are confused on exactly how much grade was laid. The evidence suggests that Mormons laid substantially complete grade for the C.P. from Monument Point to Ogden, and considerably less than complete grade from Ogden up Weber Canyon to the mouth of Echo Canyon.

through the Wasatch Mountains during the winter of 1868-69 was \$10 million above normal construction cost.⁵ But it was a small amount to pay in order to reach Ogden first.

In October the Central Pacific had worked a clever strategem which came very near succeeding. It had filed with the Interior Department maps and profiles of its proposed line from Monument Point to Echo Summit. Secretary of the Interior Orville H. Browning, who had been hostile to the Union Pacific throughout, accepted the map. Stanford then proceeded on the theory that the Central Pacific line, regardless of the small amount of work done east of Ogden, was the true line of the Pacific Railroad, and the only one on which subsidy bonds could be issued. From his base in Salt Lake City, he exerted himself to occupy and defend this line. In Washington, Huntington filed application for an advance of \$2.4 million in subsidy bonds, two-thirds of the amount due for this portion of the line.

The Union Pacific, of course, protested mightily. Dodge and the Ames brothers hurried to Washington and used all their influence to block the move of the Central Pacific. Browning retreated, and in January appointed a special commission, headed by Maj. Gen. G. K. Warren, to go west and determine the best route through the disputed territory. Congressmen friendly to the Union Pacific exacted a pledge from Secretary of the Treasury Hugh McCulloch that he would not issue the bonds until the commission had reported.

5. Dodge, How We Built the Union Pacific, 23.

They failed, however, to take account of Huntington's powers of persuasion. As the administration of Andrew Johnson drew to a close, the Treasury Department prepared the bonds for issue. By March 4, 1869, when Ulysses S. Grant took office, it had turned over \$1.4 million to Huntington. When the Warren Commission reached Utah, it found that the Union Pacific was almost to Ogden and had obviously won the race. The commissioners therefore confined their investigation to the line between the two railheads.⁶ But the issue was to be resolved in Washington, where the new President and the officials of both railroads had been brought by events to appreciate the necessity of working out a compromise.

Dodge and several others interested in the Union Pacific met with Huntington in Washington on April 9, 1869. They drew up an agreement "for the purpose of settling all existing controversies between the Central Pacific and Union Pacific Railroad Companies." Each company got half of the pie, for both were to have access to the Great Basin. The terminus was to be located at a point to be agreed upon by both companies within eight miles west of Ogden. The Union Pacific, however, was to build west from Ogden to Promontory Summit and there unite with the Central Pacific. Then it was to sell this segment of the line to the Central Pacific. Subsidy bonds were to be issued to the Union Pacific as far as the terminus

6. The report of the Warren Commission is printed in House Ex. Doc. No. 15, 40th Cong., 3rd sess. (Washington, 1869).

near Ogden, and to the Central Pacific from the terminus west.

The following day, April 10, Congress by joint resolution put its stamp of approval on the agreement:

The common terminus of the Union Pacific and the Central Pacific railroads shall be at or near Ogden; and the Union Pacific Railroad Company shall build, and the Central Pacific Railroad Company shall pay for and own, the railroad from the terminus aforesaid to Promontory Summit, at which the rails shall meet and connect and form one continuous line.⁷

Climbing the Promontory

To Leland Stanford, in Salt Lake City, it became more and more apparent as 1868 drew to a close that the Union Pacific would reach Ogden first. Crocker and Strobridge might push their coolies to the limit, but they could not possibly beat the Union Pacific to Ogden. At this time the Big Four still hoped that Huntington's maneuvers in Washington would checkmate their opponents. But Secretary Browning's vacillation, culminating in appointment of the Warren Commission in January 1869, made this hope increasingly bleak. "I tell you Hopkins the thought makes me feel like a dog" wrote Stanford, looking at the darkening picture. "I have no pleasure in the thought of railroad. It is mortification."⁸

7. Historians differ considerably on the details of this episode. This account is drawn from Clark, Leland Stanford, 263; Sabin, Building the Pacific Railway, 293-95; Bancroft, History of California, 571-72; and "History of the Golden Spike" (Ms., U.P.R.R., Omaha, 1949), 8-10, typescript in Southern Pacific Collections.

8. Stanford to Hopkins, Jan. 29, 1869, in Clark, Leland Stanford, 260.

Stanford had already turned his attention to the country west of Ogden, rather than the Wasatch Mountains, as the area where the contest would be decided. By occupying and defending the line from Monument Point to Ogden, the Central Pacific might yet gain enough bargaining strength to get into Ogden too, or at least to block the Union Pacific from moving west of Ogden. This, as we have seen, is precisely what happened.

The first 48 miles west of Ogden offered no construction problems. The line crossed perfectly level sagebrush plain skirting mud flats north of Bear River Bay. But between Blue Creek and Monument Point stood the Promontory Mountains, a rugged hill mass extending 35 miles south into Great Salt Lake and ending at Promontory Point. A practicable pass separated the Promontory Mountains from the North Promontory Mountains. The summit of this pass lay in a circular basin at 4,900 feet elevation, about 700 feet above the level of the lake. On the west the ascent could be made in 16 relatively easy miles; but on the east, where the slope was more abrupt, the ascent required, for an airline distance of five miles from Blue Creek to the summit, 10 tortuous miles of grade with a climb of 80 feet to the mile. Between Monument Point and Blue Creek the Central Pacific and Union Pacific attacked the last stretch of difficult country. Here sheer momentum and public encouragement carried them to the finish line of the great railroad race, even though it had been called off, a draw, in Washington a

month earlier. And here, while the nation celebrated, they drove the last spike in the Pacific Railroad.

Stanford had turned his attention to the Promontory on November 9, 1868.⁹ He had a long talk with Brigham Young, who at length agreed to furnish Mormon labor for grading the Central Pacific line from Monument Point to Ogden. Young also promised, in allocating forces, to give preference to neither the Union Pacific nor the Central Pacific. With backing from the President of the Church, Stanford had no difficulty contracting for this work with the firm of Benson, Farr and West, which was headed by Mormon bishops. Young himself was to receive one-fourth of the profits. The contract called for Mormon gangs to prepare the line for track under the supervision of Central Pacific engineers. The engineers in turn were instructed to work the force compactly and not let it spread out over more of the line than could be completed.

The Union Pacific was calling in its crews from Humboldt Wells, Nevada, in order to work west of Ogden. Stanford promptly sent a gang of graders to the Promontory to take possession of strategic points. Then, in mid-November, he went there himself. With Lewis M. Clement, Assistant Chief Engineer, whom Montague had put in charge at the Promontory, and Consulting Engineer George Gray, Stanford carefully inspected the preliminary line run by Butler

9. The Promontory refers to the Promontory Mountains, Promontory to the townsite at the Summit.

Ives in 1867. This line, he found, required an 800-foot tunnel through solid limestone. It would cost \$75,000 to blast and, moreover, delay tracklaying at a critical time. Stanford ordered his surveyors to stake out a new line at the expense of alignment in order to avoid tunneling. Even so, a fill of 10,000 yards of earth (later famous as the "Big Fill") would be necessary, and rock cuts would consume 1,500 kegs of black powder.¹⁰

By the end of the year the Central Pacific was well in control of the line from Monument Point to Ogden. Foreseeing a battle with the Union Pacific over right-of-way, Stanford had sent one of his contractors, Bishop West, to buy right-of-way through the Mormon ranches along the line. He had men on the entire line. About two-thirds of the grade in each consecutive 20 miles had been finished. Blasting and filling at the Promontory, however, moved slowly. The contractors gave many excuses, but Stanford "started Brigham after them," and they began to work faster. Nevertheless, Stanford believed that Strobridge and the ^{CHINESE} Chinamen would have to put the finishing touches on the grade.

As late as mid-January the Union Pacific still had no graders west of Ogden, although its surveyors were running lines parallel to the Central Pacific grade. Stanford lamented on January 15 that:

10. Stanford to Hopkins, Nov. 9 and 21, Dec. 1 and 3, 1868, in *ibid.*, 250-55. The preliminary line of Ives is shown on the map prepared by the Warren Commission and submitted to the Secretary of the Interior on May 14, 1869 (National Archives).

From Ogden to Bear River the lines are generally 500 feet to a quarter of a mile apart. At one point they are probably within two hundred feet. From Bear River to the Promontory the U.P. are close to us and cross us twice, on the Promontory itself they will be very close to us, but they have so many lines, some crossing us and some running within a few feet of us and no work on any, that I cannot tell you exactly how the two lines will be. They are still surveying there for a location.

In February the Union Pacific finally put crews west of Ogden.

By early March its grade had been all but completed to the eastern base of the Promontory. In mid-March the Mormon Company of Sharp and Young, under contract to the Union Pacific, began blasting at the Promontory. Stanford complained on March 14, "The U.P. have changed their line so as to cross us five times with unequal grades between Bear River and the Promontory. They have done this purposely as there was no necessity for so doing." But, he said, "we shall serve notices for them not to interfere with our line and rest there for the present."¹¹

During March 1869 both companies went to work on the Promontory with a vengeance. A letter to a Salt Lake newspaper recalls the scene vividly:

Five miles west of Brigham City on this [west] side of Bear River, is situated the new town of Corinne, built of canvas and board shanties. The place is fast becoming civilized, several men having been killed there already, the last one was found in the river with four bullet holes through him and his head badly mangled.

11. Stanford to Hopkins, Dec. 13, 1868, Jan. 15 and March 14, 1869, in *ibid.*, 257, 262-63, 266-67; Deseret Evening News (Salt Lake City), March 25, 1869; Salt Lake Daily Reporter, March 13, 1869.

Work is being vigorously prosecuted . . . both lines running near each other and occasionally crossing. Both companies have their pile drivers at work where the lines cross the Bear river. From Corinne west thirty miles, the grading camps present the appearance of a mighty army. As far as the eye can reach are to be seen almost a continuous line of tents, wagons and men.

Junction City, twenty-one miles west of Corinne is the largest and most lively of any of the new towns in this vicinity. Built in the valley near where the lines commence the ascent of the Promontory, it is nearly surrounded by grading camps, Benson, Farr and West's headquarters a mile or two south west. The heaviest work on the Promontory is within a few miles of head-quarters. Sharp and Young's Union Pacific blasters are jarring the earth every few minutes with their glycerine and powder, lifting whole ledges of lime stone rock from their long resting places, hurling them hundreds of feet in the air and scattering them around for a half mile in every direction. Mr. T. E. Ricks showed me a boulder of three or four hundred pounds weight that was thrown over a half mile and completely buried itself in the ground within twenty yards of his cook room. . . . At Carlisle's Carmichael's works a few days ago four men were preparing a blast by filling a large crevice in a ledge with powder. After pouring in the powder they undertook to work it down with iron bars, the bars striking the rocks caused an explosion; one of the men was blown two or three hundred feet in the air, breaking every bone in his body, the other three were terribly burnt and wounded with flying stones. . . .

. . . there is considerable opposition between the two railroad companies, both lines run near each other, so near that in one place the U.P. are taking a four feet cut out of the C.P. fill to finish their grade, leaving the C.P. to fill the cut thus made. . . .

The two companies' blasters work very near each other, and when Sharp & Young's men first began work the C.P. would give them no warning when they fired their fuse. Jim Livingston, Sharp's able foreman, said nothing but went to work and loaded a point of rock with nitro-glycerine, and without saying anything to the C.P. "let her rip." The explosion was terrific. . . and the foreman of the C.P. came down to confer with Mr. Livingston about the necessity of each party notifying the other when ready for a blast. The matter was speedily arranged to the satisfaction of both parties.

The C.P. have about two-thirds of their heavy work done at this place, while the U.P. have just got under good headway.

In other places the grade of the U.P. is finished and the C.P. just beginning, so taking it "all in all" it is hard to say which company is ahead with the work. . . .

Several dance houses are now in full blast, astonishing the natives . . . by the manner in which they are developing the resources of the Territory. I will venture the assertion that there is not less than three hundred whiskey shops between here and Brigham City, all developing the resources of the Territory, and showing the "Mormons" what is necessary to build up a country and make it self-supporting and permanent.

There are many heavy contractors on the Promontory, but the heaviest firm I have heard of is named "Red Jacket." I notice nearly every wagon that passes have a great many boxes marked with his name.¹²

The companies encountered the heaviest work on the east slope of the Promontory. Grades of each company, ascending the slope side by side, went down within a stone's throw of each other. They snaked up the face of the mountain, blasting through projecting abutments of limestone, and crossing deep ravines on earth fills and trestles. At the crest they broke through a final ledge of rock to enter the basin of Promontory Summit. The last mile, across the level floor of the basin, required little more than scraping, and there is, consequently, almost no evidence of the railroad at the summit today.

Of unflinching interest to observers were the Central Pacific's "Big Fill" and the Union Pacific's "Big Trestle," which crossed a deep gorge about half way up the east slope. Farr and West began work on the Big Fill, which Stanford had predicted would require

12. "Saxey" to Editor, Promontory, March 25, 1869, Deseret Evening News, March 30, 1869.

10,000 yards of dirt, early in February 1869 and were almost finished when a reporter visited the scene in mid-April:

A marked feature of this work . . . is the fill on Messrs. Farr & West's . . . contract. Within its light-colored sand face of 170 feet depth, eastern slope, by some 500 feet length of grade, reposes the labor of 250 teams and 500 men for nearly the past two months. On this work are a great many of the sturdy Mormon yeomanry of Cache County. Messrs. William Fisher and William C. Lewis, of Richmond, are the present supervisors. Our esteemed friend, Bishop Merrill, preceded them. On either side of this immense fill the blasters are at work in the hardest of black lime-rock, opening cuts of from 20 to 30 feet depth. The proximity of the earth-work and blasting to each other, at these and other points along the Promontory line, requires the utmost care and vigilance on the part of all concerned, else serious if not fatal, consequences would be of frequent occurrence. Three mules were recently killed by a single blast.¹³

The Big Trestle was of even greater interest than the Big Fill. The Union Pacific lacked the time to fill in the deep gorge as the Central Pacific had done. Construction Superintendent Sam Reed and Consulting Engineer Silas Seymour therefore decided to bridge the defile with a temporary trestle, which could later, after the roads had joined, be replaced with an earth fill. On March 28, with the Big Fill still under construction, they ordered their bridge engineer, Leonard Eicholtz, to start the Big Trestle.¹⁴ About 150 feet east of and parallel to the Big Fill, it too required deep cuts at each end.

13. Salt Lake City Daily Telegraph, April 14, 1869.

14. Diary of Eicholtz, March 28, 1869, in "History of the Golden Spike" (Ms., U.P.R.R., Omaha, 1949), 39-A.

Finally completed on May 5, the Big Trestle was about 400 feet long and 85 feet high. To one reporter, nothing he could write "would convey an idea of the flimsy character of that structure. The cross pieces are jointed in the most clumsy manner. It looks rather like the 'false work' which has to be put up during the construction of such works. . . . The Central Pacific have a fine, solid embankment alongside it, which ought to be used as the track."¹⁵ Another correspondent predicted that it "will shake the nerves of the stoutest hearts of railroad travellers when they see what a few feet of round timbers and seven-inch spikes are expected to uphold a train in motion."¹⁶

Meanwhile, the rails came forward steadily and rapidly. The Union Pacific entered Ogden on March 8, 1869. By March 15 it was at Hot Springs, by March 23 at Willard City. On April 7 the first train steamed across the newly completed Bear River bridge and entered Corinne. At the same time the Central Pacific was still about 15 miles west of Monument Point. Two days later, on April 9, Dodge and Huntington worked out their compromise in Washington (see p. 41). The Union Pacific grading crews received orders on April 11 to stop all work west of Promontory Summit, where they had laid grade parallel to the Central's grade all

15. Daily Alta California (San Francisco), May 1, 1869.

16. Daily Morning Call (San Francisco), April 30, 1869 (quoting Evening Bulletin of April 29).

the way to Monument Point.¹⁷ Three days later Stanford ordered all work halted on the Central Pacific east of Blue Creek, i.e., the eastern base of the Promontory.¹⁸

The agreement removed all cause for continued competition in grading and tracking. But competition had become a habit, and each company strained to reach Promontory Summit, the agreed meeting place, before the other. The Union Pacific had won the race to Ogden, but the heavy work on the east slope of the Promontory prevented its winning the race to the Summit. And now, ironically, the Union Pacific was in effect a contractor for the Central Pacific. Its gangs worked with the knowledge that the line from Ogden to Promontory Summit would, according to the Dodge-Huntington agreement, be turned over to the Central Pacific.

The Last Month

As the two railheads drew closer to each other, an air of excitement pervaded the construction camps north of Great Salt Lake, as well as the entire nation, which followed the daily progress of tracklaying in the newspapers. The Central Pacific dismissed its contractors during the first week of April and pushed crews of Chinamen forward to finish the grades on the

17. Eicholtz Diary, April 11, 1869.

18. E. B. Ryan to Butler Ives, Ogden, April 14, 1869, Mark Hopkins Papers, Stanford University.

Promontory.¹⁹ The Union Pacific rushed Irishmen to the front to help the Mormon contractors finish the heavy work on the east slope.²⁰ By April 16 the Union Pacific and Central Pacific tracks were only 50 miles apart. The Union Pacific, moving west across the desert from Corinne, slowed for want of ties.²¹ The Central Pacific had reached Monument Point and, one-fourth mile from the lake shore, established a sprawling grading camp. Housing the Chinese workers, it consisted of three separate canvas cities totalling 275 tents.²²

There were constant reminders of the approaching revolution in transcontinental travel. Trains of freight wagons of Russell, Majors, and Waddell periodically passed the construction crews.

19. Salt Lake City Daily Telegraph, April 9, 1869.

20. Years later General Dodge (How We Built the Union Pacific,²⁴) recalled that the Union Pacific's Irishmen, contemptuous of the Orientals working on the grade above them, fired charges without warning in hope of blowing up some Chinamen. When the Central Pacific's protests failed to bring results, the coolies quietly set a "grave" of their own and sent several Irishmen to their reward. Although repeated by most railroad historians, this episode needs considerably more verification. No mention of it has been found in the contemporary press, and it is unlikely that the swarms of reporters on the Promontory would have let such a good story pass unchronicled. Moreover, the Central Pacific did not replace the Mormons with Chinese until about April 7. By this same date the Union Pacific had finished its grading west of the Summit and on April 11 pulled its graders back. On April 9 the Dodge-Huntington agreement fixed Promontory Summit as the junction. Thereafter there was no need for further parallel competitive construction, and there appears to have been none.

WHAT ABOUT
CP CONSTRUCTION
DOWN TO
BLUE CREEK?

21. Daily Alta California, April 23, 1869.

22. Ibid., April 26, 1869.

A photograph of one meeting the Stanford Special at Monument Point furnishes a graphic illustration of the momentous changes in the making. Stagecoaches had once spanned the continent. Now the Wells Fargo Company provided service between railheads. The run of the coaches daily grew shorter as the rails moved forward three to four miles a day. For the Army, change of station between East and West had once involved exhausting marches of several months duration across the western territories. In April 1869 the 12th Infantry, destined for the Presidio of San Francisco, detrained at Corinne and in two days marched to the Central Pacific railhead, where the soldiers boarded a train for the coast.²³

As April drew to a close, officials of the two companies fixed Saturday, May 8 as the date of the ceremony uniting the rails.²⁴ By the 27th the Union Pacific railhead approached Blue Creek, 10 miles east of the Summit. But rock cuts and three trestles required another 12 to 15 days of labor, even though Reed, in order to break through by May 8, worked his Mormons and Irishmen night and day.²⁵ Blasters tore at Carmichael's Cut, one and three-fourths miles above the Big Trestle, while other workers built another trestle at the west entrance to Carmichael's Cut. Below, the Big Trestle

23. Daily Morning Call, May 4, 1869; Salt Lake City Daily Telegraph, April 28, 1869.

24. "History of the Golden Spike" (Ms., U.P.R.R., Omaha, 1949), 59.

25. Daily Morning Call, April 29, 1869.

remained unfinished. A third trestle spanned Blue Creek. Stanford went to the Union Pacific railhead and offered the Central Pacific's Big Fill for the Union Pacific track, but found no one with authority to change the line.²⁶

Earlier, the Union Pacific had laid eight miles of track in one day, a feat, they boasted, that the Central Pacific had not accomplished. Crocker vowed to top this record, but he cannily waited until the distance between railheads was so small that the Union Pacific could not retaliate. On April 27, with the Central Pacific 16 miles from the Summit and the Union Pacific nine, Crocker set out to lay 10 miles of rail in one day. But a work train jumped the track after two miles had been completed, and he decided to wait until the next day.²⁷

On April 28, with men and supplies carefully massed for the attempt, and with Casement, Reed, and other Union Pacific officials as witnesses, Crocker gave the signal. Eight Irish tracklayers supported by an army of Chinese coolies not only laid 10 miles of track, thus topping the Union Pacific record, but set a record of their own that has yet to be equalled.

Each of the four front men ran thirty feet with one hundred and twenty-five tons wrote the correspondent of the San Francisco Evening Bulletin. . . . Each of the other four men lifted and placed one hundred and twenty tons at their end of the rails. The

26. Ibid., April 30, 1869.

27. Ibid., April 29, 1869.

distance travelled was over ten miles, besides extra walking. . . . Those eight men would not consent to shift, and are proud of their work. They, like all Central Pacific men, are water-drinkers.

Immediately in front of the eight are three pioneers, who, with shovel and by hand, set the ties thrown by the front teams in position; while this is doing, another party are distributing spikes and fresh bolts at each end of the rail, while some of the party are regulating the gauge. These track-layers are a splendid force, and have been settled and drilled until they move like machinery. . . .

Beside the track-layers come the spike-starters, who place all the spikes needed in position; then comes a reverend-looking old gentleman who packs the rails and uses the line, and, by motion of his hands, directs the track-straighteners. The next men to the spike-drivers are the bolt-screwers, quite a large force. Behind them come the tampers, four hundred strong, with shovels and crow-bars. They level the track by raising or lowering the ends of the ties, and shovel in enough ballast to hold them firm. When they leave it, the line is fit for trains running twenty-five miles an hour. When all the iron thrown on the track has been laid, the handcars run to the extreme front, and the locomotive and iron train come as close to the front as possible; another two miles of iron is thrown off, and the process repeated. Alongside of the moving force are teams hauling tools, and water-wagons, and Chinamen, with pails strung over their shoulders, moving among the men with water and tea. The foremen are all mounted on horseback.

The scene is a most animated one. From the first pioneer to the last tamper, perhaps two miles, there is a thin line of 1,000 men advancing a mile an hour; the iron cars, with their living and iron freight, running up and down; mounted men galloping backward and forward. Far in the rear are trains of material, with four or five locomotives, and their water-tanks and cars. . . . Keeping pace with the track-layers was the telegraph construction party, hauling out, and hanging, and insulating the wire, and when the train of offices and houses stood still, connection was made with the operator's office, and the business of the road transacted by the officials.

At 1:30 p.m. the track had advanced six miles in six hours and 15 minutes. The remaining four miles could easily be laid. The Central crews knew that victory had been won, and Crocker stopped the work for lunch. The site was named Camp Victory, and

later became the station of Rozel. After an hour of rest the workers returned to the task. By 7 p.m. they had completed a little more than 10 miles of track, and a locomotive ran the entire distance in 40 minutes to prove to the Union's observers that the work was well done.²⁸

April 28 carried the Central Pacific railhead to within four miles of the Summit. With the Union Pacific still at Blue Creek, Eicholtz ordered iron and ties hauled to the Summit. On May 1 Union Pacific crews began putting in a side track at the Summit, where tents and board shanties already announced the birth of the town of Promontory.²⁹ This same day the Central Pacific brought its rails to the Summit, 690 miles from Sacramento, the end of the line.³⁰

During the first few days of May the population at the Promontory reached its maximum. Central Pacific camps stretched all the way from Promontory to Monument Point, while Union Pacific

28. Most histories of the Pacific Railroad relate this episode. This account has been drawn from newspaper accounts and from Sabin, Building the Pacific Railway, 202-204. The quotation is from the Daily Morning Call, May 1, 1869, quoting from the Evening Bulletin, April 30.

29. Eicholtz Diary, April 28, May 1, 1869. For a description of Promontory in 1869, see p. 69.

30. Daily Alta California, May 2, 1869. Eicholtz recorded in his diary under May 1 that the Central Pacific had reached the Summit the day before. The Alta California's correspondent on May 1 wrote that "the last tie and rail were placed in position to-day."

camps dotted the valley of the Summit and cluttered the plain at the foot of the east slope. They bore such names as Deadfall, Murder Gulch, Last Chance, and Painted Post. Jack Casement's headquarters train stood on a siding a half-mile east of Blue Creek bridge. A 68,000-gallon tank, filled by pipes leading to a spring in the hills (where the Thiokol plant is now located), had been built at this siding to furnish the camps with water.³¹

The Union Pacific camps here rocked with the riotous living that had characterized their predecessors all the way from Omaha.

Noted a reporter from San Francisco:

The loose population that has followed up the tracklayers of the Union Pacific is turbulent and rascally. Several shooting scrapes have occurred among them lately. Last night [April 27] a whiskey-seller and a gambler had a fracas, in which the "sport" shot the whiskey dealer, and the friends of the latter shot the gambler. Nobody knows what will become of these riff-raff when the tracks meet, but they are lively enough now and carry off their share of plunder from the working men.³²

Asked what his people thought of such behavior, one of the Mormon graders replied, "Ah, we don't care, so long as they keep to themselves."³³

Nor was all peace and quiet in the Central Pacific camps, although the California papers delighted in emphasizing the low moral tone of the Union Pacific. At Camp Victory on May 6 the

31. Deseret Evening News, May 4, 1869.

32. Daily Alta California, April 30, 1869.

33. Ibid., May 1, 1869.

Chinese clans of See Yup and Yung Wo, whose rivalry stemmed from political differences in the old country, got into an altercation over \$15 due one group from the other. The dispute grew heated and soon involved several hundred laborers. "At a given signal," reported a correspondent, "both parties sailed in, armed with every conceivable weapon. Spades were handled, and crowbars, spikes, picks, and infernal machines were hurled between the ranks of the contestants." When shooting broke out, Strobridge and his foremen intervened to halt the proceedings. The score, aside from a multiplicity of cuts, bruises, and sore heads, totalled one Yung Wo combatant mortally wounded.³⁴

Irish graders of the Union Pacific, on the other side of the Promontory, heard about the battle between the Chinese clans. They decided to have some fun themselves. Next day a gang of them showed up at Promontory, where a Chinese camp had been laid out, and announced their intention "to clean out the Chinese." Fortunately, the inhabitants of this camp were absent on a gravel train, and the Irishmen left without accomplishing their purpose.³⁵

Both companies had already recognized that they had more men on the Promontory than the amount of remaining work could keep occupied. Beginning on May 3, therefore, they began discharging

34. Ibid., May 8, 1869; Daily Morning Chronicle (San Francisco), May 8, 1869.

35. Daily Morning Chronicle, May 9, 1869.

large numbers of men and sending others to the rear to work on portions of track that had been hastily laid. "The two opposing armies . . . are melting away," reported the Alta California, "and the white camps which dotted every brown hillside and every shady glen . . . are being broken up and abandoned."³⁶ Riding out from Salt Lake City, photographer Charles R. Savage saw this breakup in progress, and wrote in his diary: "At Blue River [Creek] the returning 'democrats' so-called were being piled upon the cars in every stage of drunkenness. Every ranch or tent has whiskey for sale. Verily, men earn their money like horses and spend it like asses."³⁷

On May 5 the Union Pacific finally achieved the breakthrough. The last spike went into the Big Trestle and the rails moved out on to the frightening span. A train loaded with iron steamed across it. That evening the final blast exploded in Carmichael's Cut. On May 6 the trestle between Carmichael's Cut and Clark's Cut was finished. The graders went through both cuts, made a swing around the head of a ravine, and passed through a final cut to link up with grade already laid in the basin of the Summit. Here rails and ties had been arranged for rapid tracklaying and, at the Summit itself, a 2,500-foot side track installed.³⁸

36. May 6, 1869, dispatch from Promontory of May 5.

37. Savage Diary, May 7, 1869, in "History of the Golden Spike" (Ms., U.P.R.R., Omaha, 1949), 29-30.

38. Daily Morning Chronicle, May 8, 1869; Daily Alta California, May 6 and May 8, 1869.

The Central Pacific waited patiently--May 8 was still the date for joining the rails--as the Union Pacific tracklayers followed closely on the heels of the graders. Late in the afternoon of May 7 the tracklayers came within 2,500 feet of the Central Pacific's end of track at the Summit. Here they connected, by a switch, with the side track placed earlier. Using this side track, the Union Pacific's No. 60, with Casement aboard, came to a halt opposite the Central Pacific railhead, about 100 feet to the southeast of it, and let off steam. The Central's "Whirlwind," No. 66, rested on its own track. The engineer greeted the Union's locomotive with a sharp whistle, and "thus the first meeting of locomotives from the Atlantic and Pacific Coasts took place."³⁹

Only 2,500 feet remained. The next day, May 8, the final drama was supposed to be enacted. But the Union Pacific could not meet the schedule. The last spike was not to be driven until May 10.

Driving the Last Spike

At Promontory the afternoon of May 7 was sultry and the sky heavy with rain clouds, which annoyed the photographers trying to capture the climactic scenes of construction. The Stanford Special arrived loaded with an array of dignitaries from California

³⁹. Daily Alta California, May 8, 1869; Daily Morning Chronicle, May 9, 1869.

and Nevada headed by Leland Stanford and including U. S. Commissioners J. W. Haines, F. A. Tritle, and William Sherman; S. W. Sanderson, Chief Justice of California; and A. P. K. Safford, newly appointed territorial governor of Arizona.

Also aboard were the ceremonial trappings to be used in uniting the rails. There was a gold spike presented by David Hewes, San Francisco construction magnate. Intrinsically worth \$350, it was engraved with the names of the Central Pacific directors, sentiments appropriate to the occasion, and, on the head, "The Last Spike." There was another gold spike, presented by the San Francisco News Letter; a silver spike brought by Commissioner Haines as Nevada's contribution; and a spike of iron, silver, and gold brought by Governor Safford to represent Arizona. (Arizonians knew nothing of it. Safford had not yet taken office, and had never been in Arizona.) Finally, there was a silver plated sledge presented by the Pacific Union Express Company, and a polished laurel tie presented by West Evans, the Central Pacific's tie contractor.

The festive mood of the Stanford Special noticeably dampened when Jack Casement broke the news that the Union Pacific could not hold the ceremony on May 8, as planned, and would not be ready until May 10. The Stanford party faced the prospect of spending the weekend on the bleak Promontory. To make matters worse, rain began falling. It rained for two days, turning the Promontory into a sea of mud. Stanford wired the unwelcome news to San

Francisco, but too late. The citizens there had already started celebrating. Undismayed, they celebrated for three days.

Casement's explanation was that the trains bringing the dignitaries from the East had been held up in Weber Canyon. Heavy rains had made the road bed soft and had washed out a trestle.⁴⁰ But there was another reason, too. The special carrying Vice President Durant, Sidney Dillon, and other Union Pacific officials had reached Piedmont on May 6. A gang of 500 workers surrounded Durant's private car shouting demands for back wages. When the conductor tried to move the train out of the station, the men uncoupled Durant's car, shunted it on to a siding, and chained the wheels to the rails. Here he would stay, they said, until \$253,000 was forthcoming. To make sure, they also took possession of the telegraph office. Durant submitted, wired Oliver Ames in Boston for the money, and paid off the strikers. He was released and managed to be at Promontory on May 10, although the severe headache from which he suffered on that day may well have owed its origins to the experience at Piedmont.⁴¹

Left in the role of host at Promontory, Casement made up an excursion train, stocked with "a bountiful collation and oceans of champagne," to take the Stanford party sight-seeing. The train

40. Daily Morning Chronicle, May 11, 1869.

41. San Francisco Bulletin, May 10, 1869; Perkins, Trails, Rails and War, 237.

left Promontory Saturday morning. At Taylor's Mill the Union Pacific staged a "splendid luncheon" on the banks of ^WHeber River. "The most cordial harmony and good feeling marked their entertainment and all the toasts were drank with loud applause." From here the party went to Ogden, rode a short distance up Weber Canyon, and spent the night in Ogden. Next day, Sunday, they returned to Promontory, boarded the Stanford Special, and pulled back to Monument Point to enjoy a repast of plover killed by Stanford's steward.⁴²

This same day, May 9, Casement's workers at Promontory kept busy. As the rain continued, they laid the final 2,500 feet of track, leaving a length of one rail to separate their track from that of the Central Pacific. They also installed a "Y" for the locomotives to use in turning around.⁴³

Rain quit falling during the night and May 10 dawned bright, clear, and a bit chilly. During the morning two trains from the

42. Daily Morning Chronicle, May 11, 1869; Sabin, Building the Pacific Railway, 211.

43. Daily Morning Chronicle, May 11, 1869. Sidney Dillon ("Driving the Last Spike," 258) years later stated that, during the night of May 9, the Union Pacific pulled a coup by laying a siding on to the Summit and thus capturing Promontory as a Union Pacific station. When Central crews arrived early next morning for the same purpose they found that the Union Pacific had gained the advantage. This story is repeated in most railroad histories. No report of it, however, appears in contemporary sources, and the installation, at Promontory, of the Union Pacific siding on May 7 and the "Y" on May 9 cast some doubt on the verity of the story.

East and two from the West arrived at Promontory bearing railroad officials, guests, and spectators. With the construction workers and assorted denizens of Promontory, the crowd totalled, according to the best estimates, 500 to 600 people, far short of the 30,000 that had been predicted.⁴⁴

Representing the Central Pacific were Stanford, Strobridge, Montague, Gray, and others; for the Union Pacific Durant, Dillon, Duff, Dodge, Reed, the Casement brothers, and many more. Important guests had come from Nevada, California, Utah, and Wyoming. Huntington, Hopkins, and Crocker, of the Central Pacific, did not attend; nor did the Union Pacific's Oakes and Oliver Ames. Brigham Young sent Bishop John Sharp to represent the church. About 15 reporters covered the proceedings. A battalion of the 21st Infantry (probably three companies) under Maj. Milton Cogswell, enroute to the Presidio of San Francisco, were opportunely on hand to lend a military air, as was Brig. Gen. Patrick Edward Conner, district commander. The military band from Fort Douglas and the 10th Ward Band from Salt Lake City supplied the music.⁴⁵

44. Unless otherwise cited, this account of the ceremony is drawn from J. N. Bowman, "Driving the Last Spike at Promontory, 1869," California Historical Society Quarterly, XXVI (1957), 97-106, 263-274. This article is a careful reconstruction, based on all available sources, of the events of May 10. It differs materially from most of the secondary accounts, but is obviously the most authoritative discussion of the matter that is likely ever to be written.

45. Hugh F. O'Neil, "List of Persons Present, Promontory, Utah, May 10, 1869," Utah Historical Quarterly, XXIV, 2 (April, 1956), 157-164.

Officials of both roads had been unable to agree on details of the program. Stanford had come equipped with spikes and other ceremonial trappings, but Dodge wanted the Union Pacific to stage its own last spike ceremony. Only two preparations, therefore, had been made in advance. The speeches had been written and handed to newsmen in Ogden on Sunday. And the telegraphers had devised an apparatus for transmitting the blows on the last spike by telegraph to the waiting nation. An ordinary sledge (not the silver plated one) had been connected by wire to the Union Pacific telegraph line, and an ordinary spike had been similarly connected to the Central Pacific wire. Five minutes before noon, when the proceedings were to begin, Stanford and Durant agreed on a joint program.

The crowd had grown loud and unmanageable, which interfered with the ceremony and made it impossible for most people to see what was happening. J. H. Beadle wrote that "it is to be regretted that no arrangements were made for surrounding the work with a line of some sort, in which case all might have witnessed the work without difficulty. As it was the crowd pushed upon the workmen so closely that less than twenty persons saw the affair entirely, while none of the reporters were able to hear all that was said."⁴⁶ This explains the confusion that has surrounded the history of the event ever since.

46. Utah Daily Reporter, May 12, 1869.

At noon the infantrymen lined up on the west side of the tracks, and Casement tried, with little success, to get the crowd to move back so that everyone could see. The Union Pacific's Rogers 119, Engineer Sam Bradford, and the Central Pacific's "Jupiter" No. 60, Engineer George Booth, steamed up and stopped, facing each other across the gap in the rails. Spectators swarmed over both locomotives trying to obtain a better view. At 12:20 p.m. Strobridge and Reed carried the polished laurel tie and placed it in position. Auger holes had been carefully bored in the proper places for seating the ceremonial spikes. Officials and prominent guests formed a semicircle facing east on the east side of the tracks.

Edgar Mills, Sacramento businessman, served as master of ceremonies and introduced the Rev. Dr. John Todd of Pittsfield, Massachusetts, correspondent for the Boston Congregationalist and the New York Evangelist. Dr. Todd opened the ceremony with a two-minute prayer, while telegraph operators from Atlantic to Pacific cleared the wires for the momentous clicks from Promontory. After the prayer, Haines, Tritle, and President W. H. Nottingham of the Michigan Southern and Lake Shore Railroad drove the last save one of the iron spikes. At 12:40 p.m. W. N. Shilling, a telegraph key on a small table in front of him, tapped out "We have got done praying. The spike is about to be presented."

Next, Dr. W. H. Harkness of Sacramento presented to Durant, with appropriate remarks, the two gold spikes. Durant slid them

into the holes in the laurel tie, and Dodge made the response, substituting for Durant whose headache sent him to his car immediately after the ceremony. Tritle and Safford presented the Nevada and Arizona spikes, and these Stanford slid into the holes prepared. L. W. Coe, President of Pacific Union Express Company, presented Stanford with the silver sledge, which was then used symbolically to "drive" the previous spikes, although the blows, if indeed any there were, were not sharp enough to leave marks on the spikes.

Finally came the actual driving of the last spike--an ordinary iron spike driven with an ordinary sledge into an ordinary tie. Using the wired sledge, Stanford and Durant both swung at the wired spike. Both missed--to the delight of the crowd. Shilling, however, clicked three dots over the wires at exactly 12:47 p.m., triggering celebrations at every major city in the country. With an unwired sledge, Strobridge and Reed divided the task of actually driving the last spike in the Pacific Railroad.

Amid cheers, the two engineers advanced the pilots of their locomotives over the junction. Men on the pilots joined hands and a bottle of champagne was broken over the laurel tie as christening. The chief engineers of the railroads shook hands as photographers exposed wet plates. The military officers and their wives gave the precious spikes ceremonial taps with the tangs of their sword hilts, thus producing the only marks to be seen today on the gold spike. The Central Pacific's "Jupiter" backed up and the Union Pacific's No. 119 crossed the junction. Then No. 119

backed up and let "Jupiter" cross the junction, thus symbolizing inauguration of transcontinental rail travel.

Shilling sent off two telegrams: "General U. S. Grant, President of the U.S. Washington, D.C. Sir: We have the honor to report the last rail laid and the last spike driven. The Pacific Railroad is finished." "To the Associated Press: The last rail is laid, the last spike driven, the Pacific railroad is completed. Point of junction, ten hundred eighty-six miles west of the Missouri river and six hundred ninety miles east of Sacramento. --Leland Stanford, Thomas C. Durant."⁴⁷

The ceremony over, the precious spikes and tie were removed. Even so, souvenir hunters made necessary numerous replacements of the "last spike" and the "last tie."⁴⁸

J. H. Beadle briefly summed up what happened next:

Ceremony was then at an end, and general hilarity took place. The western train soon set out for Sacramento, but that of the Union Pacific remained on the ground till evening, presenting a scene of merriment in which Officers, Directors, Track Superintendents and Editors joined with the utmost enthusiasm. . . . At a late hour the excursionists returned to Corinne.⁴⁹

47. Quoted in Perkins, Trails, Rails and War, 241.

48. The Hewes gold spike and the Nevada silver spike are now in the museum at Stanford University, Palo Alto, California, together with the silver sledge. The whereabouts of the second gold spike, which seems to have been given to Dodge, and the Arizona spike is a mystery. The laurel tie was destroyed in the San Francisco earthquake and fire of 1906, which also, incidentally, destroyed the records of the Southern Pacific (Central Pacific) Railroad.

49. Utah Daily Reporter, May 12, 1869.

Promontory After May 10

Promontory had enjoyed its hour of glory, but the town did not immediately die. The two companies did not carry out the provision of the Dodge-Huntington agreement fixing the terminus at a point near Ogden until November 1869. For six months, therefore, Promontory served as the terminus, where passengers transferred from one railroad to the other. Union Pacific trains turned around on the "Y" that had been installed on May 9, while Central Pacific trains used a turntable that was built after the rails joined.

A typical journey from west to east required a traveller to leave Sacramento at 6:30 Monday morning on the Central Pacific. He arrived at Promontory, the transfer point, at 9:55 p.m. Tuesday and there boarded a Union Pacific train that departed at 10:30 p.m. He reached Omaha at 9:30 Thursday morning, Chicago at 1:30 p.m. Friday, and New York at 6:30 Monday morning, exactly seven days after leaving Sacramento.⁵⁰ By the end of 1869, 13,067 passengers had passed through Promontory going east and 17,605 going west.⁵¹

During the months that it served as the terminus, Promontory in appearance resembled the other boom towns that had followed the Union Pacific across the country. A string of boxcars on a siding provided offices and living quarters for railroad employees.

50. Central Pacific Timetable reproduced in Mary Gamble, "To Europe via Promontory in 1869," California Historical Society Quarterly, XXIV, 4 (December, 1945), 365.

51. Statistics on Passenger Volume Compiled for C.P. Huntington, Dec. 28, 1872, Mark Hopkins Papers, Stanford University.

A row of tents, many with false board fronts, faced the railroad across a single dirt street. There were 17 on May 10, 30 by late May. They housed hotels, lunch counters, saloons, gambling dens, a few stores and shops, and the nests of the "soiled doves." Signs advertised "Red Cloud," "Red Jacket," and "Blue Run." Sales of this commodity boomed, for the nearest source of water was six miles away, and that insufficient. The railroads hauled long strings of tank cars full of water to Promontory from springs 30 to 50 miles distant.

By May 10 a large number of "hard cases" had already descended on Promontory, including, reported the correspondent of the Sacramento Bee, "Behind-the-Rock Johnny, hero of at least five murders and unnumbered robberies." Three-card monte, ten-die, strap game, chuck-a-luck, faro, and keno flourished in the gambling tents. A gang of cut-throat gamblers and confidence men called the "Promontory Boys" set up headquarters and were "thicker than hypocrites at a camp meeting of frogs after a shower." Their modus operandi was to put "cappers" aboard the trains at Kelton or Corinne to insinuate themselves into the confidence of passengers. At Promontory the cappers led their victims to one of the gambling tents and into the clutches of the Promontory Boys.

J. H. Beadle, editor of the Utah Daily Reporter, summed up the character of this last of the Union Pacific boom towns. It was, he wrote, "4900 feet above sea level, though, theologically speaking, if we interpret scripture literally, it ought to have

Another group of inspectors, the "Eminent Citizens," also condemned the trestles: "Several of the high trestles between Blue creek station and Promontory ought to be filled up at once. They were evidently regarded as temporary expedients to gain time in opening the road."⁵⁴

After the Central Pacific took over the line from Promontory to the terminus near Ogden, it eliminated the two trestles on the slope, apparently sometime during 1870. It did this by laying track on its own grade, installed during the great railroad race. Thus the new line followed the Central Pacific grade from somewhere near the eastern base of the Promontory, across the Big Fill parallel to the Big Trestle, across another fill parallel to the trestle connecting Carmichael's and Clark's Cuts, and thence in a sweep to the north across the valley to the Summit. The basis for this conclusion is the following quotation from a traveller's guide published in 1871:

After leaving Blue Creek Station we cross the Blue Creek itself, on a trestle bridge 300 feet long and 30 feet high, and winding around several projections and mountain-spurs in a most sinuous course, we run along a trestle bridge on the left, 500 feet long and 87 feet high. And a famous bridge it is, though the builders of it don't derive much advantage from their workmanship and engineering skill. It was built by the Union Pacific Railroad Company, who brought their track to Promontory. . . . You will observe that the old track of the Union Pacific runs parallel

54. Eminent Citizens Report, Senate Ex. Doc. No. 90, 41st Cong., 2nd sess. (Washington, 1870). Report dated Oct. 30, 1869.

to the Central Pacific, at a short distance, all the way to Promontory, the former junction point of the two railroads.⁵⁵

With transfer of the terminus to Ogden in November 1869, the lusty days of Promontory came to an end. The Central Pacific, however, built a station, water tank, and roundhouse at Promontory. Locomotives pulling heavy trains required additional power to climb the east slope, and the company kept helper-engines at the Summit for this purpose. The town also became headquarters of a railroad cattle enterprise, and the company built the "Crocker Mansion" about a mile to the northwest. With eight bedrooms and as many bathrooms, it was a showplace of northern Utah. It later deteriorated and, within recent years, was moved to the nearby community of Howells, where it still stands.⁵⁶

In 1903 the Southern Pacific Railroad, which had absorbed the Central Pacific, decided to shorten the line by building the Lucin Cutoff across Great Salt Lake. When finished in 1906, it replaced the original line running north of the lake, although the Promontory line continued to be used occasionally when bad weather threatened the cutoff. Finally, in 1942, the company tore up the rails between Lucin and Corinne and contributed the scrap

55. T. Nelson, The Central Pacific Railroad: A Trip Across the North American Continent from Ogden to San Francisco (Nelson's Pictorial Guide Books: New York, 1871), 10. Denver Public Library.

56. Mrs. Bernice G. Anderson from various local informants.

iron to the war effort. Workmen began the task, amid ceremonies with two engines facing each other, by pulling up the "last spike" at Promontory. The old telegraph line, also, has been removed, although an occasional square pole may still be seen next to the abandoned grade. At Promontory itself, only a concrete monument erected by the Southern Pacific about 1915, and a farmhouse occupied during the summer months, remain to recall the events that occurred here in 1868 and 1869.

BIBLIOGRAPHY

Manuscript Material

Mark Hopkins Papers, Stanford University Library. These papers deal mainly with organizational and financial matters. Of value to this study were letters to and from Butler Ives in early 1869.

Union Pacific Railroad, Department of Public Relations, Comp. "History of the Golden Spike." Omaha, 1949. This is a typescript compilation that sets forth much misinformation but also much valuable primary material, including the diaries of C. R. Savage and Leonard Eicholtz. The Southern Pacific Railroad kindly provided a photostat of the copy furnished it by the Union Pacific.

"The Building of the Central Pacific Railroad." Compiled from Geneological History of the Family of Joshua Hewes. Privately printed, 1913. Typescript in Southern Pacific Railroad Collections. David Hewes donated the gold spike.

Government Documents

Dodge, Grenville M. How We Built the Union Pacific Railroad. Senate Ex. Doc. No. 447, 61st Cong., 2nd sess. (1910).

House Ex. Doc. No. 15, 40th Cong., 3rd sess. (1869).

House Ex. Doc. No. 180, 44th Cong., 1st sess. (1876).

Senate Ex. Doc. No. 90, 41st Cong., 2nd sess. (1870).

Newspapers

Daily Alta California (San Francisco), February to June 1869.

Daily Bee (Sacramento), February to June 1869.

Daily Morning Call (San Francisco), February to June 1869.

Daily Morning Chronicle (San Francisco), February to June 1869.

Daily Telegraph (Salt Lake City), February to June 1869.

Deseret Evening News (Salt Lake City), February to June 1869.

Frank Leslie's Illustrated Newspaper, June 5, 1869.

Harper's Weekly, February to July 1869.

Salt Lake Daily Reporter (Salt Lake City), January to April 1869.

Utah Daily Reporter (Corinne), April to August 1869. Successor of
Salt Lake Daily Reporter.

Articles

Anon. "Monthly Record of Current Events." Harper's New Monthly Magazine, XXXIX (1869).

Bell, W. A. "Pacific Railroads." Fortnightly Review, May 1869.

Bowles, Samuel. "The Pacific Railroad--Open." The Atlantic Monthly, XXIII (1869).

Bowman, J. N. "Driving the Last Spike at Promontory, 1869." California Historical Society Quarterly, XXXVI (1957).

Bowsher, Amos. See Heath, Earle.

Brown, Margaret L. "Asa Whitney and his Pacific Railroad Campaign." Mississippi Valley Historical Review, XX (1933).

Carman, Harry J., & Mueller, Charles H. "The Contract and Finance Company and the Central Pacific Railroad." Mississippi Valley Historical Review, XIV (1927).

Cotterill, Robert S. "Early Agitation for a Pacific Railroad." Mississippi Valley Historical Review, V (1919).

Dillon, Sidney, "Historic Moments: Driving the Last Spike of the Union Pacific." Scribner's Magazine, XII (1892).

Gamble, Mary. "To Europe Via Promontory in 1869." California Historical Society Quarterly, XXIV (1945).

Heath, Earle. "Eye Witness Tells of 'Last Spike' Driving." Southern Pacific Bulletin, May 1926. Recollections of Amos Bowsher, who wired the spike and sledge for the May 10 ceremony.

Mueller, Charles H. See Carman, Harry J.

- O'Neil, Hugh F. "List of Persons Present, Promontory, Utah, May 10, 1869." Utah Historical Quarterly, XXIV (1956).
- Paxson, Frederick L. "The Pacific Railroads and the Disappearance of the Frontier in America." Annual Report of the American Historical Association, 1907.
- Russel, Robert R. "The Pacific Railway Issue in Politics Prior to the Civil War." Mississippi Valley Historical Review, XII (1925).
- Turner, Frederick Jackson. "The Significance of the Frontier in American History." Annual Report of the American Historical Association, 1893.

Books

- Albright, George L. Official Explorations for Pacific Railroads, 1853-1855. University of California Publications in History: Berkeley, 1921.
- Bailey, W. F. The Story of the First Trans-Continental Railroad. Pittsburgh, 1906.
- Bancroft, Hubert H. History of California, VII, 1860-1890. San Francisco, 1890.
- Beadle, J. H. The Undeveloped West; Five Years in the Territories. Philadelphia, 1873.
- - - - - Western Wilds and the Men Who Redeem Them. Cincinnati, 1878.
- Clark, George T. Leland Stanford. Stanford, 1931.
- Croft, George A. Croft's New Overland Tourist and Pacific Coast Guide Book. Omaha, 1882.
- Davis, John P. The Union Pacific Railway: A Study in Railway Politics, History, and Economics. Chicago, 1894.
- Galloway, George D. The First Transcontinental Railroad.
- Grinnell, George B. The Fighting Cheyennes. 2nd ed., Norman, 1956.
- Lewis, Oscar. The Big Four. New York, 1938.

- Nelson, T. The Central Pacific Railroad: A Trip Across the North American Continent from Ogden to San Francisco. Nelson's Pictorial Guide Books: New York, 1871.
- Perkins, J. R. Trails, Rails and War: The Life of General G. M. Dodge. Indianapolis, 1929.
- Poor, Henry V. Manual of Railroads of the United States, for 1869-70. New York, 1869.
- Riegel, Robert E. The Story of Western Railroads. New York, 1926.
- Sabin, Edwin L. Building the Pacific Railway. Philadelphia and London, 1919.
- Trottman, Nelson. History of the Union Pacific: A Financial and Economic History. New York, 1923.
- White, Henry K. History of the Union Pacific Railway. Economic Studies of the University of Chicago. Chicago, 1895.