



Spanning a Continent

No sooner were America's first railroads operating in the 1830s than people of vision foresaw transcontinental travel by rail. The idea gained support as a national railroad system took shape. By the beginning of the Civil War, America's eastern states were linked by 31,000 miles of rail, more than in all of Europe. Virtually none of this network, however, served the area beyond the Missouri River. Until the Great American Desert and the Rockies were bridged, the vast western territories would be a part of the nation in name only. A continent-spanning railroad would also bring more tangible benefits: It would boost trade, shorten emigrants' journey, and help the army control American Indians opposed to white settlement. Anticipating great financial and political rewards, northern, midwestern, and southern senators made their cases for locating the eastern terminus in their regions.

In California, Theodore Judah had his own plan for a transcontinental railroad. By 1862 the young engineer had surveyed a route over the Sierra Nevada and persuaded wealthy Sacramento merchants to form the Central Pacific Railroad. That year Congress

authorized the Central Pacific to build a railroad eastward from Sacramento and in the same act chartered the Union Pacific Railroad in New York. After the Civil War had removed the southern senators from the debate over the eastern terminus location, the central route near the Mormon Trail was chosen, with Omaha as the eastern terminus. Each railroad received loan subsidies of \$16,000 to \$48,000 per mile, depending on the difficulty of the terrain, and 10 land sections for each mile of track laid.

The Central Pacific broke ground in January 1863 and the Union Pacific that December, but neither made much headway while the country's attention was diverted by the Civil War. Investors could reap greater profits from the war, and the army had first priority on labor and materials. So Central Pacific's Collis Huntington and Union Pacific's Thomas Durant, exemplars of the no-holds-barred business ethics of the period, visited Washington with enough cash to help congressmen understand their problems. A second Railroad Act of 1864 doubled the land subsidies, but little track was laid until labor and supplies were freed at war's end.

Central Pacific crews faced the rugged Sierra range almost immediately. While the Union Pacific started on easier terrain, its work parties were raided by Sioux and Cheyenne. With eight flatcars of material needed for each mile of track, supplies were a logistical nightmare for both railroads, especially Central Pacific, which had to ship every rail, spike, and locomotive 15,000 miles around Cape Horn. Both pushed ahead faster than anyone had expected. The work teams, often headed by ex-army officers, were drilled until they could lay two to five miles of track a day on flat land.

Union Pacific drew on the vast pool of America's unemployed: Irish, German, and Italian immigrants, Civil War veterans from both sides, ex-slaves, and even American Indians—8,000 to 10,000 workers in all. It was a volatile mixture, and drunken bloodshed was common in the "Hell-on-wheels" towns thrown up near the base camps. Because California's labor pool had been drained by the rush for gold, followed by the silver boom, Central Pacific hired several thousand Chinese, the backbone of the railroad's work force.

By mid-1868 Central Pacific crews had crossed the Sierra and laid 200 miles of track, and the Union Pacific had laid 700 miles over the plains. As the two work forces neared each other in Utah, they raced to grade more miles and claim more land subsidies. Both pushed so far beyond their railheads that they passed each other, and for more than 200 miles competing graders advanced in opposite directions on parallel grades.

Congress finally declared the meeting place to be Promontory Summit, where, on May 10, 1869, two locomotives pulled up to the one-rail gap left in the track. After a golden spike was symbolically tapped, a final iron spike was driven to connect the railroads. The Central Pacific laid 690 miles of track; the Union Pacific 1,086. They had crossed 1,776 miles of desert, rivers, and mountains to bind together East and West.

A "Grand Anvil Chorus"

Surveying



Surveyors, working hundreds of miles ahead, set no grade steeper than 116 feet-of-rise per mile.

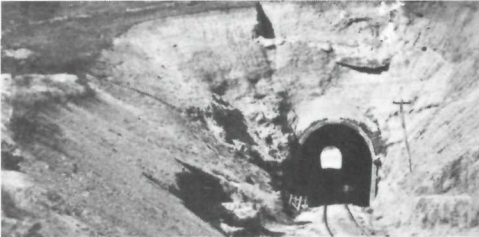
Grading



Using picks and shovels, carts, one-horse scrapers, and black powder, graders prepared about 20 miles

of bed at a time, cutting ledges, blasting hills, and filling huge ravines.

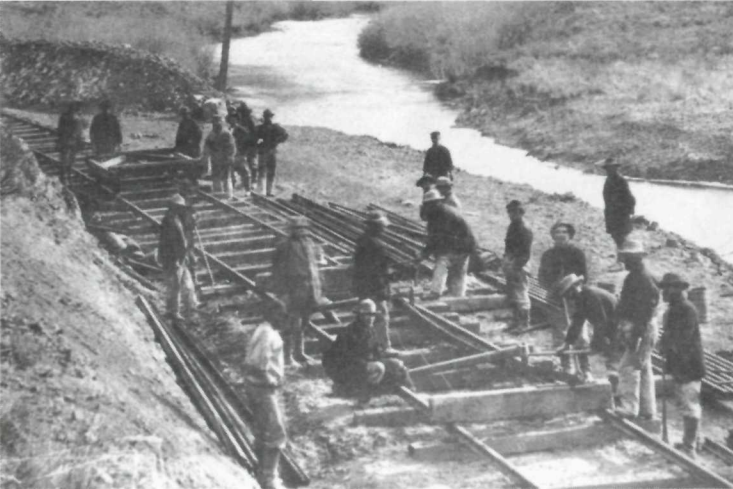
Trestles and Tunnels



Workers five to 20 miles ahead of tracklaying gangs built high wooden trestles and dug tunnels. The Central Pacific blasted

15 tunnels through Sierra granite, sometimes resorting to dangerous nitroglycerine.

Track Laying



On 2,500 ties per mile, one gang could lay two pairs of 30-foot, 560-pound rails a minute. Spikers drove

10 spikes per rail, three blows per spike. Here, railbenders form curves with sledgehammers.

Telegraph



The nation's second transcontinental telegraph was strung beside the track as the railroad advanced.

Snow Sheds



Drifts and avalanches so hindered trains in the Sierra Nevada that the Central Pacific had to

build 37 miles of peaked snow sheds and sloped galleries to keep snow off the tracks.

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End of the Frontier



Above: "Held Up" by Newbold Trotter. Right: Ute Indians watch Union Pacific crews lay track through Utah.



OAKLAND MUSEUM

SMITHSONIAN INSTITUTION

Imagine watching the last spike driven to complete the transcontinental railroad. Not too long before it had seemed an impossibility. The vast distance to be spanned, equal to the breadth of Europe, overwhelmed the early 19th-century mind. When Dr. Hartwell Carver first proposed the idea in 1832, it was as audacious as would have been a prediction in 1932—before TV and computers—that we would all watch a human walk on the moon by 1969.

Exactly a century before that event, the railroad too, in the words of a contemporary reporter, overcame "that old enemy of mankind, space." The transformation of the western United

States was wrought by two rails four feet eight and one-half inches apart, snaking across hundreds of miles of sparseness. They joined two oceans and cemented the political union of states with a physical link.

But they were also a wedge through the frontier. The West belonged to the American Indians and the enormous herds of buffalo on which they depended. Many Indians fought white settlement of their land, but as the railroads brought in car after car of troops and supplies, the warriors could no longer repel the army. Settlers flowed in behind and put the land to the plow, while millions of buffalo were killed.

For these late emigrants, the railroad changed what it meant to be a pioneer. A journey that had taken six months by ox-drawn wagon took six or seven days by train. The Union Pacific built railroad stations along the way, and settlements grew up around them. Some railways sold supplies and even provided dormitories for emigrants until they could settle. Twenty-one years after the railroad was completed, the frontier was history.

Even before it was completed, the railroad had begun to work its changes on the West. As the railheads moved across the land, supply houses and service businesses grew up in their wakes.

Some tent towns like Reno and Cheyenne survived to become respectable cities. Workers who had been trained on the railroad built towns and staffed factories and mines.

A major anticipated benefit of the railroad—increased trade with the Far East—never materialized. The Suez Canal was completed the same year as the railroad, and Far East goods could now be shipped to Europe faster by way of the canal than across America. But that loss was compensated for by the rapidly growing western rail trade, out of which a vigorous, interlocking economy developed. The western mountains were rich with low-grade silver, lead, and copper

ores, made profitable by long trains of ore cars. They were used by industries in the East, whose products found a growing market in the West. Western agriculture made great advances as new farming techniques, livestock strains, and machinery moved in by rail. Cash, generated by the produce shipped east, poured into the region, and budding western financiers learned how to raise money to capitalize new industry. Factories were built, and the growing industrial population provided a new market for western farm produce.

More than economically, the railroads tied the West to the eastern states. They altered the very

pace of life, putting people on a schedule who had always geared their activities to natural rhythms. National politics came west, as candidates made whistle stop tours of small towns in search of votes. As railroads made travel into the West safe and comfortable, visitors from the eastern states and Europe toured the New America. Their sometimes exaggerated accounts of the region engendered the Old West myths that helped shape American culture. With the coming of the railroads, the West, for so long the vast, forbidding "out there," was brought into the national life.

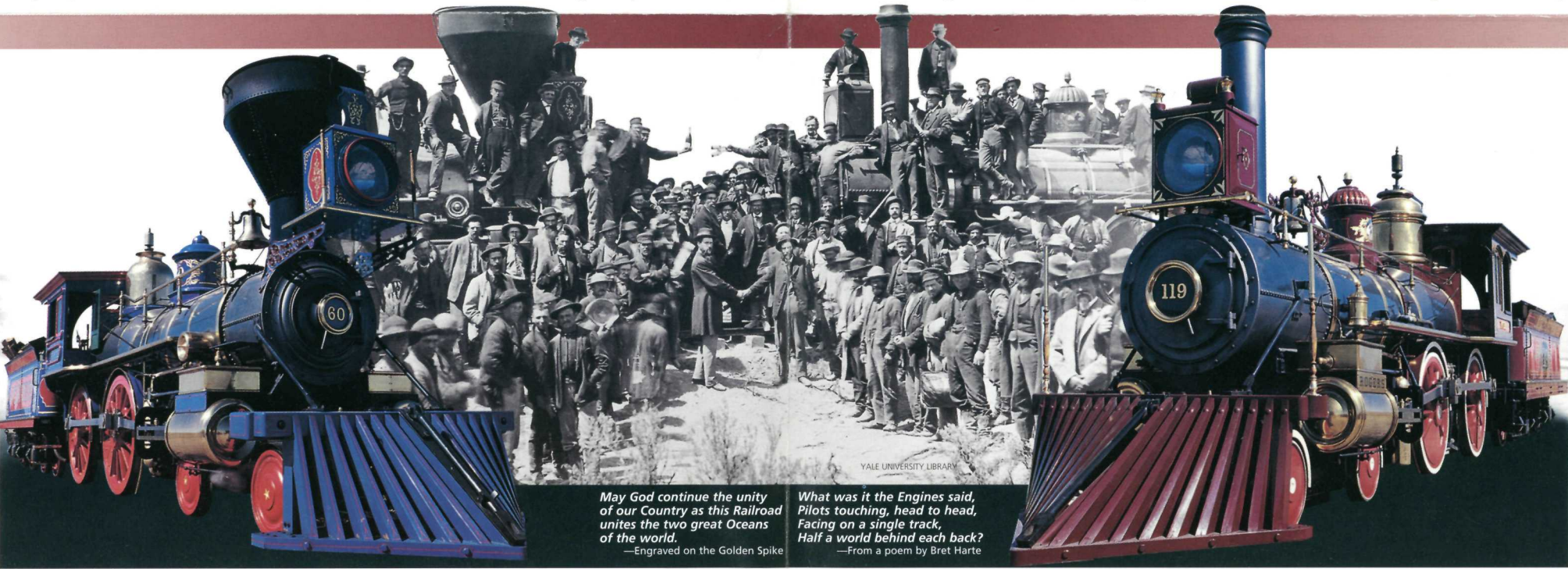
Central Pacific



STANFORD UNIVERSITY CALIFORNIA STATE RAILROAD MUSEUM

Central Pacific President Leland Stanford hired thousands of Chinese workers for the job. Much

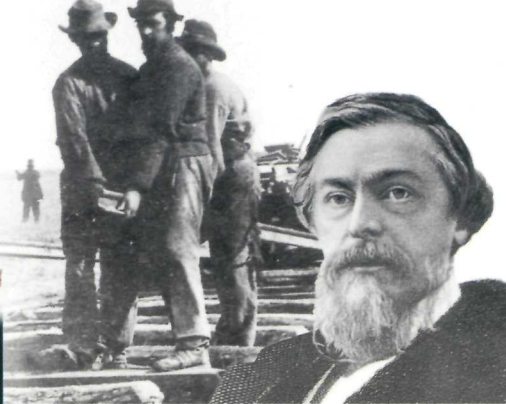
of California's native work force was trying its luck in the gold fields.



May God continue the unity of our Country as this Railroad unites the two great Oceans of the world.
—Engraved on the Golden Spike

What was it the Engines said,
Pilots touching, head to head,
Facing on a single track,
Half a world behind each back?
—From a poem by Bret Harte

Union Pacific



KANSAS STATE HISTORICAL SOCIETY UNION PACIFIC

A diverse crew labored for Union Pacific Vice-president Thomas Durant: immigrants, ex-slaves, and

Civil War veterans. They did not always get along in camp, but made effective track-laying teams.

