

with two towns, Cascades and Upper Cascades. It was constructed in 1852, and was the first railroad built west of the Rocky Mountains.

THE DALLES RAILROAD, in Oregon, passes the second portage of the Columbia, is fifteen miles in length and connects the two towns of Dalles and Celilo. This is an important link in the navigation of the river, and is the medium of an extensive traffic.

THE OREGON CITY RAILROAD has a length of one and a half miles, and is chiefly used for the portage of merchandise past the falls of the Willamette.

THE CENTRAL SYSTEM.

THE CENTRAL PACIFIC RAILROAD constitutes the main trunk of the Central System. This, joined with the Union Pacific, is the pioneer transcontinental line. Its conception was deemed visionary, and for many years the project was scouted as impracticable, but its realization is one of the grandest triumphs in the history of finance and civil engineering. During the decade succeeding the acquisition of California by the United States, the subject of a Pacific Railroad was an important element in politics, and was vehemently discussed in Congress, but the jealousy of sections prevented the consummation of any plan. The route naturally suggested was that usually taken by the emigrants, but Southern interests pointed to the lofty mountains and deep snows, and thus successfully opposed all propositions favored by the North. The secession of the South left the North free to act, and soon thereafter the desired measures were passed in Congress and the work entered upon. Fortunately the men who sprung forward and secured the subsidies and franchises were equal to the task, and from the date of commencement the work was pushed through with a skill and energy never surpassed. The work of construction began at Sacramento in 1863, and on the 13th of May, 1869, the last spike was driven and connection with the Union Pacific made at Promontory in Utah, eight hundred and twenty-eight miles from San Francisco. By subsequent arrangement Ogden was made the connecting point, giving the Central Pacific eight hundred and eighty miles of road, and the Union Pacific ten hundred and thirty-two miles to Omaha. This grand line leads to San Francisco as a mighty river leads to the sea, gathering its branches from every valley trending to its course and bears its flood to the metropolis. The Central Pacific crosses Utah, Nevada and California, and stretches its arms out far and wide on either side. The branches are already many, but their number in the future will be vastly increased. In the distant East are the Utah Northern, Central and Southern, with the lesser branches of these; in Nevada is the Virginia and Truckee now in operation; the Eastern Nevada is in course of construction; the Nevada Central and others projected, and in California are the California and Oregon; the California Northern; the Sacramento Valley; the California Pacific; San Francisco and North Pacific; the Copperopolis; the San Joaquin Valley, and the Southern Pacific with their secondary branches. These give an aggregate of one thousand and sixty miles now completed, and with the main trunk one thousand nine hundred and forty-one miles of railroad in the Central System, of which one thousand seven hundred and thirty-four miles are owned and controlled by a single company. The difficulties to overcome in constructing and maintaining the Central Pacific road were enough to deter the boldest engineers and capitalists. A snow-covered mountain was to be crossed at an altitude of seven thousand and forty-two feet with less than one hundred miles in which to make the rise. By great skill in engineering and judgment in selecting a route affording a nearly uniform grade was found, the heaviest being one hundred and sixteen feet per mile and the ascent with trains is effected by doubling the locomotive power used on ordinary grades. Protection from the snow is obtained by sheds, or housing the track, or covering it with a well-supported roof, of which there is built an aggregate of about nineteen miles. At the San Francisco terminus a substantial pier has been constructed reaching into the bay eleven thousand feet, where a depth of water twenty-six and one half feet at low tide is found and where are slips and docks for ships and steamers and large storehouses for the shelter and reception of merchandise. This, however, is only in part the terminus. Large steamers are provided with railroad tracks upon their decks by which trains of cars are ferried without delay, and merchandise destined for San Francisco is discharged at the depots within the city. Here, in Mission Bay and vicinity, the company has, by grant and purchase, upward of two hundred acres of land, where within the past year upward of a million dollars has been expended in improvements, in constructing wharves, railroad tracks, warehouses and offices. Here connection is made with the Southern Pacific, and freight by both roads is unladen at the same warehouse. The remaining great engineering feat is to perfect the connection by a bridge across the Bay of San Francisco.

SACRAMENTO VALLEY RAILROAD.—The Sacramento Valley is the pioneer of California railroads. This was constructed in 1855 and 1856 from Sacramento to Folsom, a distance of twenty-two and a half miles, and at a cost of \$1,100,000. The building of this road was regarded as an important enterprise at the time, and it was the first ever seen by many of the early immigrants to the State. For a number of years a large business was transacted over