

The Story of a Great Tunnel

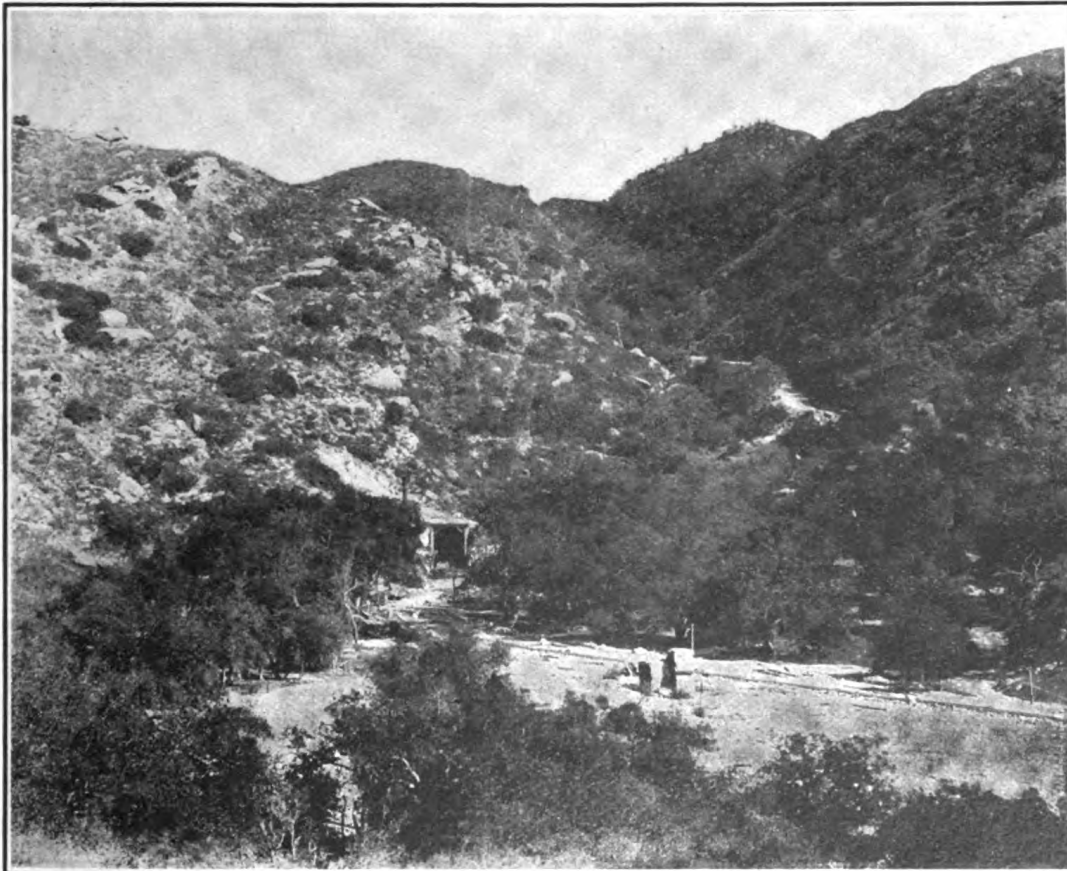
By ROBERT CHARLTON

Photographs by the author

The Santa Susana tunnel, which was begun July 16, 1900, completed August 18, 1903, and through which the first train ran March 20, 1904, is nearly a mile and a half long, and is by considerable odds the longest tunnel on the Pacific coast. Indeed, there are but three or four tunnels in the world which exceed it in length. By means of this tunnel a considerable saving is made in distance, grades and time on the Southern Pacific coast line between San Francisco and Los Angeles.

THE traveler on a railroad on a pleasant, sunshiny day sees a brakeman passing through the car, pausing as he goes to light the lamps. "Long tunnel coming," he says to himself, and awaits with languid interest the temporary extinction of the outer light. Some moments later the train hurls itself into

the engulfing blackness, and the anticipatory languid interest of the traveler is increased or diminished according as the tunnel is longer or shorter. Right there, or, at any rate, as the train rushes from the blackness into the white glare of the sunlight, the interest of the average traveler in the matter ceases.



—where one of the longest tunnels in the west has just been completed

It ceases, but it should not, for, had the traveler but known it, he has in that longer or shorter underground passage opened and closed the book wherein is written a story of deepest interest, a story of man's combat with nature and his victory in the contest; the story of the construction of a great tunnel.

we are fond of walking, or go through it, if we are able.

Some such problem as the foregoing confronted the Southern Pacific Company and its engineers but a few years ago. In the path of their progress stood the Santa Susanas. Already they had gone around the obstacle; now, regard-



—the heading of the two holes meet in a dead check

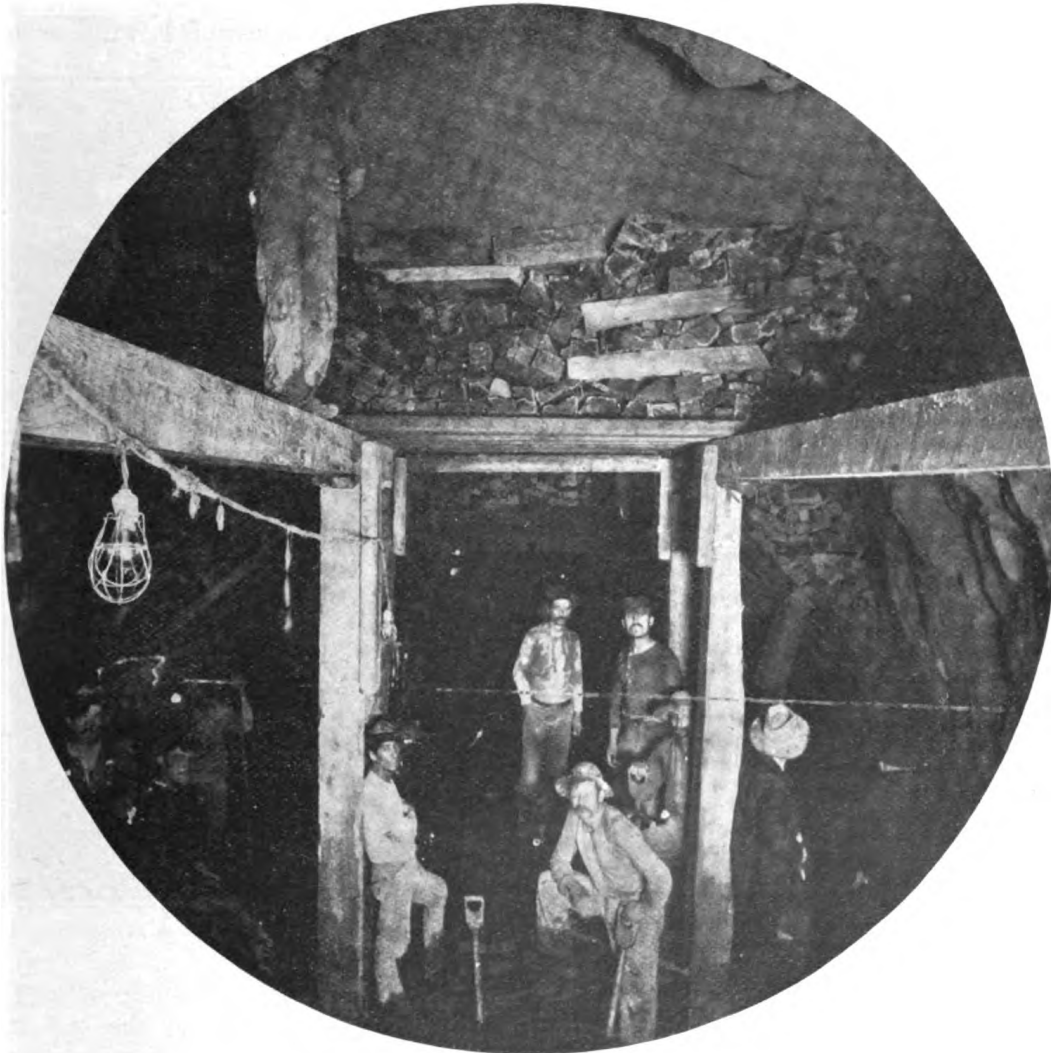
Come with me to a point some thirty-five miles northwest of Los Angeles, California, and we are precisely where the longest tunnel in the west has just been completed. Here the gray, rocky pile of the Santa Susana mountains looms directly in our path; we may climb over it, if we are aspiring; go around it, if

less of labor and cost, should they go through it? It was decided that they should—and all, or primarily, because a great reduction in grade, and six miles of space could be gained; that meant this much of easier and quicker transportation for the people. Over the old line the distance between Montalvo and

Burbank, via Saugus, was sixty-seven miles; over the proposed line (now in operation) it would be but sixty-one miles, divided as follows: Between Montalvo and Santa Susana, thirty-four miles; Santa Susana and Chatsworth Park, eight miles; Chatsworth Park and Burbank, nineteen miles. Six miles could be saved.

by night, before their gigantic task was accomplished, and one might pass on level ground from one side of the Santa Susanas to the other.

The hole that finally was pierced is about 7,500 feet, or almost a mile and a half in length, and practically every foot of this distance was dug and drilled



*—every * * * precaution known to the engineering art was taken*

That six miles meant the construction of the Santa Susana tunnel.

And here perhaps begins the real interest of a story that tells how a hole was pierced through the very heart of the mountain, and how through more than three years a small army of men labored unceasingly, both by day and

and blasted through solid rock, and the hardest of rock at that. The great labor began in July, 1900; it was completed but recently.

In an undertaking of this sort, and of this immensity particularly, it is advisable to work from both ends at once, thereby halving the time of labor. And

so, behold a miniature tent city on each side of the Santa Susanas where no city had been before. They were cities of masculines, these two, cities wherein big, raw-boned men came and went and did their daily or nightly work. Withal, they were to no small extent cities of enterprise and modern invention. For instance, these tent cities contained both electric and compressed-air plants.

and from the beginning they were confronted by a serious obstacle in their work on the west side of the mountain. The seams in the hard rock of the Susanas run from east to west; in working from the east the skilled workmen who handled the tools were drilling with the seams; in working from the west they were drilling against them. Only a person who is acquainted with such



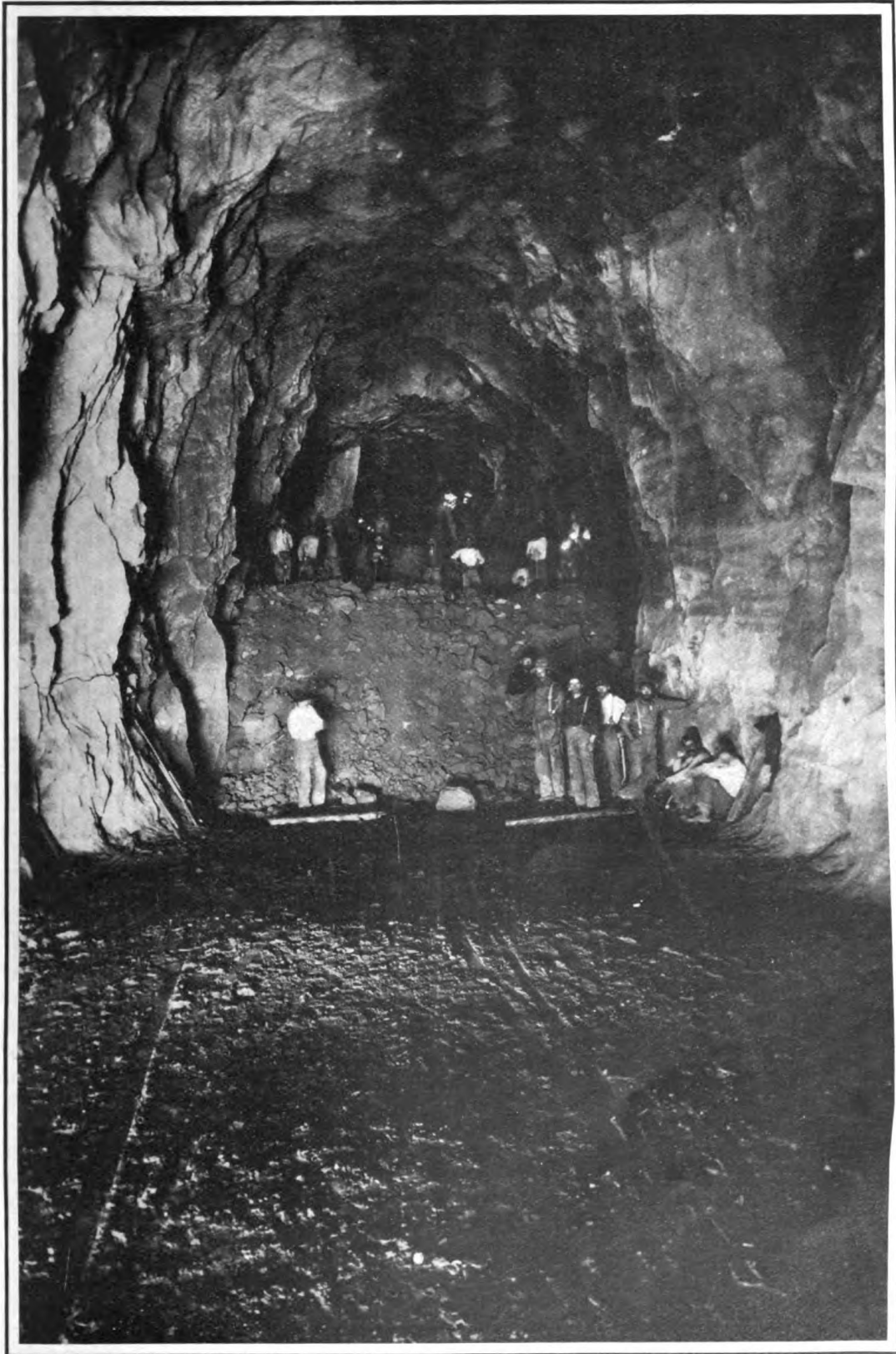
Soon . . . the train will hurry into and through the great opening which so lately was a part of Santa Susana's massive pile.

The latter was used for a double purpose; first, to supply air for the air drills, with which all of the drilling was done, and, second, to supply fresh air to the men who toiled deep within the tunnel, by whom it was much needed. As for the electric plant, in these progressive days electricity is used for lighting tunnels as well as the outside world.

The contractors who were responsible for the successful execution of this great enterprise were Erickson & Petterson,

work could estimate the effect of such varying conditions, but in the end it was indicated by the much greater length of tunnel that was completed from the east side of the mountain, although the same number of workers was employed at each end.

Slowly the work progressed—drilling, all of the time through solid rock, followed by blasts that sometimes shook the mountain, this again followed by the removal of debris; then again the drilling, the blasting and the rest, till



—through more than three years a small army of men labored unceasingly

days and nights of labor, without an hour's intermission, had grown into more than three years. Not infrequently water was encountered in great quantity, and it was less acceptable to the soaked and mud-bespattered men than it would have been but a little distance away on the Mojave desert.

It might have seemed that the solidity of the rock through which a way was slowly worked was in itself a sufficient safeguard against accidents, but the contractors did not think it so, and every additional precaution known to the engineering art was taken. Chief among these was the false timbering shown in one of the illustrations accompanying this article. This false timbering characterized the work from beginning to end. A foot or two of rock beyond the heading was drilled and blasted; then the timbering was at once brought forward to this temporary end of the hole. Doubtless it was due to this and other precautions that the notable fact may be recorded that from the beginning to the end of this work there were but few accidents of a serious nature.

At last the years of labor were almost ended; the voices of the men could be faintly heard from their adjoining chambers deep beneath the gray surface of the mountain; the final effort was to demonstrate how accurately the work had been done. The last drill was worked; the last blast was fired; where there had been solid rock a gaping, jagged hole showed the electric lights that glimmered in the cavern beyond. Now

note this fact, reported by B. Wheeler, the assistant engineer in charge:

The heading of the two holes met in a dead check; if the tunnel had been worked from one end its floor could have been no more level throughout.

Think, if you will, what a triumph of the engineering science was this, what a tribute to the skill of the engineer. Here were the two holes dug through the heart of a mountain, the labor involved enduring through more than three years, and at the end of this long delving in the blackness the two holes exactly meet simply because an engineer had willed it to be so; because he had so exactly computed directions and distances that it could not be otherwise. Rare, indeed, is the instance in which an engineer has scored so great a triumph.

Well, the long labor is ended, and successfully so. The last stroke of a drill has sounded, the last blast has been heard in that man-made cavern. Soon the brakeman will shuffle through the trains and light the lamps; the traveler will murmur, "Long tunnel coming," and the train will hurry into and through the great opening which so lately was a part of Santa Susana's massive pile.

But the story of the herculean task that preceded this culmination has not been told, for this is but such dim outline as may serve to give some shadowy conception of the energy, the force and the skill that recorded their triumph in the completion of Santa Susana tunnel.

