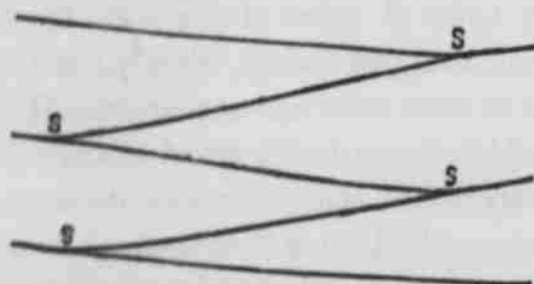


gines, one pulling and the other pushing, with much puffing and labor, carried the train slowly up the first steep grade, which rose steadily before us for a distance of nearly half a mile. Here, having passed a switch connecting with a track leading in exactly the opposite direction, but ascending with the same steep grade, we stopped and started backwards, the former rear locomotive being now the forward one. This was done three times, the four tracks lying in tiers along the mountain side (see engravings on pages 652, 661 and 674). The following simple diagram shows the principle of the switchback so plainly that a child can understand it.



The positions of the switches are indicated by the letter S, the horizontal line at the bottom representing the main track at the level of the tunnel. It is easy to see how this method of construction will take a track up one side of a mountain, where it is impossible to have a continuous line by going around it. The engravings show the nature of the road, which consists largely of steep embankments, braced with logs and timbers, and long, high trestles.

After we had passing the third, and last, switch, we began running around among the small summit peaks in an exceedingly eccentric manner, always ascending. At one point we made a complete double horseshoe, the smoke of the engine at the mouth of the tunnel, now a thousand feet below us, being seen alternately from opposite windows. While we were thus going steadily upward, the darkness of night was as steadily closing down upon us, until, when we

stopped beneath the huge snow sheds at the very summit, the magnificent landscape which opens out to the eyes of the traveler who crosses the mountain by daylight, was obscured from our view.

The track on the eastern slope is very similar to that on the west, there being two switches instead of three. There is this difference, however—that the track in many places is covered with snow sheds (see engravings on page 651), which will be necessary to protect it from the numerous avalanches which rush down the mountain sides in winter. The company is building many miles of these sheds along its main line east of the tunnel, and work is being pushed on them with all the speed possible, in order to complete them before winter sets in. The headquarters of the contractors, Messrs. Glenn, Bonzey & Co., are at Easton, a few miles down the mountain from the eastern entrance to the tunnel.

As we approached the main line again the lights in the buildings at the entrance to the eastern end of the tunnel (see engraving on page 662) glinted through the dark treetops, and the dashing sound of the beautiful cascade at that point warned us that our journey was ended, and that the wonderful switchback had been safely crossed.

Work on the tunnel is progressing with great celerity. Several shifts of men are at work, day and night, by the light of electric lamps. By the platform system, as shown in the engraving (see page 651), progress is made on the heading and breast simultaneously. A visit to the interior, after a long journey in the dark, disclosed a busy scene at the end. A large gang of men were at work in the glare of an electric light, some of them boring into the face of the rock with air drills, others carrying the detached pieces of rock on wheel-barrows and dumping them into the little ore cars, in which they are drawn to the