

to the paths of the snow-slides it is exposed to the full brunt of any movements. Accidents innumerable have been caused through the snow, but, owing to the vigilance and unrelenting care displayed by the railway officials, casualties have

and are littered with boulders and masses of huge rock, as well as being thickly clothed with timber. When the snow moves in a mass, and commences its downward descent, it gathers an immense accumulation of timber and rock, which

it hurls downwards with terrific force. It is doubtful whether any but those who are brought face to face with these slides can form any idea of the enormous force they exert. Few engineers have acquired such knowledge of this phenomenon and its results as Mr. J. P. Forde, who for many years was engineer-in-charge of the mountain division of the Canadian Pacific Railway, and who, perforce, was brought into intimate contact with the snow movements and how to avoid or to mitigate their devastating caprices.

This engineer, to whom I am indebted for the accompanying information concerning this phase of operations upon the first Canadian transcontinental railway, narrated that on one occasion a slide was timed in its descent. After attaining its full dimensions it travelled for a distance of 2,500 feet down the steep hill-side in thirty

seconds. When it had come to rest it was measured, and was found to average 500 feet in width, 40 feet in depth, and 2,000 feet in length. As the snow at the time was packed closely it weighed about 50 pounds per cubic foot. Consequently, when the slide attained its maximum velocity it was travelling at a speed exceeding 60 miles per hour, while the total weight of the moving mass of snow, ice, rock, earth, timber, and so forth was *about 1,000,000 tons!*

Is it surprising under these circumstances



INTERIOR OF SNOW-SHED ON THE CANADIAN PACIFIC RAILWAY.

been few, although now and again there has been a heartrending calamity. The railway, however, suffers more heavily from the delays which are set up by the line becoming choked with snow and debris. Thus the problem has been to reduce this adverse factor to the very smallest degree.

Snow-shedding was the obvious measure of protection, but it was admitted that such works would have to be of a remarkably massive design and solid construction to withstand the buffeting of the snow movements. The mountain slopes are steep