that huge trees are torn up like weeds, and snapped in twain like carrots, or that huge pieces of rock are wrenched from the mountain side and tossed about like pebbles? At the same time one can appreciate the unequal odds against which the engineer is pitted, and the ingenuity he is compelled to display in order to protect the slender link of communication from annihilation. Of course, it would be impossible to build any kind of structure capable of withstanding the impact of such a slide as that referred to. It is only possible to design the protective works in such a way as to achieve the desired end without offering any resistance to the movement.

How the Sheds are Planned.

The sheds are invariably built of timber, although recently ferro-concrete has been brought into service as a constructional material, as described elsewhere. Remarkable ingenuity and skill are displayed in evolving the type of shed best adapted to the prevailing conditions. No one type possibly could meet every situation. Thus the sheds are not only of great variety, but a single shed even may be of a composite character, the variations occurring at different points to secure the desired result to the best advantage.

The main idea in carrying out work of this nature is to plan the shed so that it fits as closely as possible to the ground where it is built. Accordingly the structure may be of apparent simple and light design; on the other hand it may appear to be intricate and unwarrantably heavy. The grade being laid on a shelf excavated out of the mountain side, the engineer strives to restore the former contour of the hill side, so as to carry the debris harmlessly over and clear of the line. If this is impracticable, then he designs his roof in such a manner that it offers the least resistance to the moving mass. Moreover, he studies the character of the snow-slide and its accustomed path attentively, modifying his details of design according to the velocities of the avalanche, dimensions, weights, and composition. In some places the length of travel is comparatively short, the bulk small, and for the most part comprising snow only. In another the descent will be sharp, the travelling speeds very high, with timber, loose rock, and detritus looming largely in the mass, increasing its weight and dimensions. Also he takes into consideration the contour of the ground on either side of the line, since if it rises up again on the lower side, he has to bear in mind the possibility of the slide falling back after it has passed over the shed.

Types of Sheds.

In the diagrams on page 371 different types of sheds are illustrated, and these are capable of modification to an indefinite degree. The "A" or "K" type is perhaps the most familiar from pictorial representation. Here, on the mountain side of the line, an immense rock crib is built, balks of timber dovetailed, bolted together, and fitted to the wall, being packed and loaded with massive pieces of rock, while the roof is finished off to the slope of the mountain so as to form a sharp continuation thereof. On the opposite side the uprights comprise huge posts spaced closely together, heavily braced and strutted, to secure rigidity and strength for the roof. By giving the latter a sharp fall, the moving mass can be thrown clear of the structure on the lower side, to tumble into the valley below. In the "B" type the rock cribwork is placed on either side, forming virtually a wooden tunnel for the line. In this form the protective wall on the lower side serves to prevent the debris damming back into the grade as might occur owing to the ground not falling away. In "C," as the track runs through a shallow cutting it is necessary to build up the slope formation on the mountain side so as to lift the avalanche almost imperceptibly over the track. The "E" and "F" or "J" types are modifications of this design, and are generally introduced at such places where,