

conservative judgment and a commendable determination on the part of the engineers to insert in the structure every element of strength that can be given to it.

The facing stones on both the upstream and downstream sides of the dam weigh from 6 to 8 tons each, and are quarried just to the south of the dam. The downstream face is built in steps of cut stone, as shown in our illustrations, while the body of the dam is filled in with granite blocks varying in weight up to a maximum of about 8 tons, the whole mass of masonry being laid in the best cement. The length of the dam from one side of the cañon to the other measured along the curved face is about 12 feet at the base and 675 feet at the crest. At elevations of 10, 60, and 110 feet above the riverbed, tunnels have been cut into the granite mountain, a little to the south of the dam, which pass entirely around the structure, the two upper tunnels converging to meet the lower one and emerging in the cañon on the lower side of the dam. These tunnels, which are controlled by 42-inch hydraulic valves, will enable the water to be drawn off from either of the three levels as may be desired. They will also be used as auxiliaries to the spillway in times of heavy flood. The spillway, which lies a few hundred yards to the south of the dam, is formed by making use of a natural depression in the rock, which has been blasted down for a length of 250 feet to the

PULLMAN CARS IN A RAILROAD WRECK.

The remarkable strength of the Pullman car, when it is subjected to the twisting and crushing effects of a derailment or a collision, is so well known as to need no further demonstration after its many decades of hard and useful service; but the truly remarkable manner in which the three cars shown in the accompanying wreck went through the ordeal of being rolled down a 35-foot embankment calls surely for special mention—particularly when it is borne in mind that of the occupants of these cars, not one was killed, and only one or two were seriously injured.

The wreck occurred at Punta Gorda, not far from Santa Barbara, Cal., on the line of the Southern Pacific Railway. At the place where the derailment occurred, the track, which is level and on a three-degree curve, runs around the base of the cliffs on an embankment which is 35 feet above the sandy beach of the Pacific Ocean. The train, which was made up of seven cars, was running at a speed of about 35 miles an hour, when the driving wheels of the engine left the rails, and the rear cars after running along for some 130 feet, were wrecked in the manner shown in our illustrations. Strange to say, the pony truck of the engine, the tender, and the three leading cars of the train, kept the rails; the four rear cars, however, consisting of a chair car, a dining car, and a parlor car, followed by a chair car,

passengers with nothing worse than some bad cuts and bruises. The cars were brought back to the track by building several hundred yards of temporary track from the beach to the level of the main line.

The great strength of Pullman cars, as here demonstrated, is due to the excellence of the material of which they are built and the thoroughly scientific manner in which this material is disposed. To all intents and purposes a Pullman car is a trussed bridge, the two trucks being the piers or abutments on which it rests. Below the window sills within the outside sheathing is a stout steel and timber truss which extends for the full length of the car. The floor is also admirably adapted to withstand the shock of a collision, being framed of heavy longitudinal sills with steel plating sandwiched in between them. The latest cars have also steel framing at the corner posts and in the sides and roof. We are indebted for our illustrations and particulars to Mr. E. W. Hadley, of Santa Barbara.

The Death of Dr. Common.

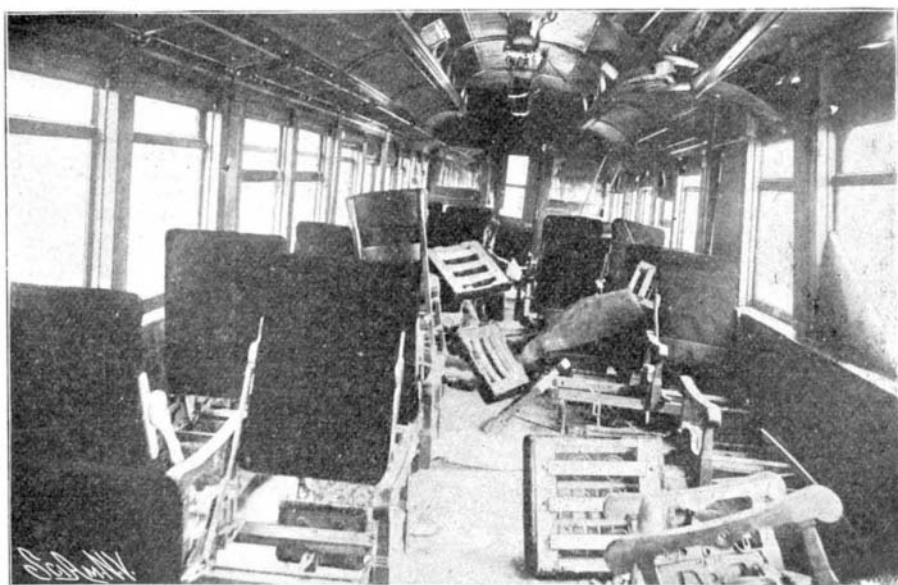
The death has occurred in England of Dr. Common, the inventor of telescopic gunsights and the constructor of large telescopes. His telescopic sight is now being fitted to all guns in both the British military and naval services, and was utilized with conspicuous



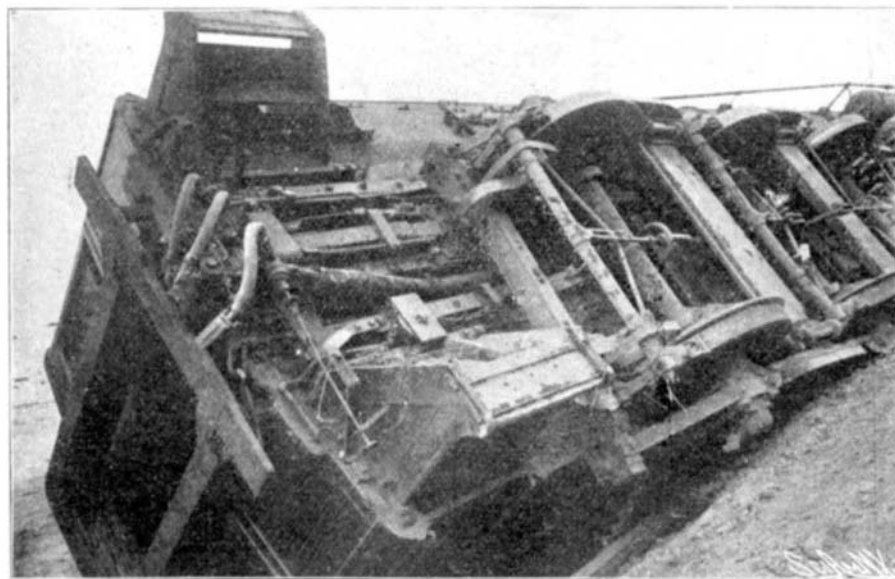
View of the Wreck Taken From the Beach.



The Wreck Seen From the Railroad Track.



Interior of Chair Car After the Wreck.



The Parlor Car, Bottom Side Up.

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desired level. It is estimated that with five feet of water passing over this spillway, and with one 42-inch valve opened under a head of 100 feet, it will be possible to get rid of surplus water at the rate of 17,000 cubic feet per second.

Word from the Mount McKinley Expedition.

Word has been received from Dr. Cook's expedition that the ascent of Mount McKinley is about to be begun.

The men have fifteen pack horses with them and 1,250 pounds of supplies, which are calculated to last them all summer.

The party will study the region traversed and will try to measure the exact height of Mount McKinley. They have other commissions, one from the Arctic Club of this city to discover whether the mountain is of volcanic origin.

The plans for the tunnel by which trains will enter the Union Station to be built in Washington provide for a branch tunnel to connect the main subway with the basement of the proposed office building for the use of members of the House of Representatives.

jumped the track. The chair car and the dining car rolled down the embankment and finally landed, right side up, on the beach, but minus their trucks. The parlor car turned almost completely over, and came to rest in the position shown in our engraving, lying upon its side on the slope of the embankment. The last car of the train came to rest diagonally across the track, the forward end obstructing the traffic, and the after end being slewed around until it overhung the embankment. The accompanying illustrations speak for themselves and require no detailed explanation; but attention is drawn to the fact that although the cars were moving at the rate of between 30 and 40 miles an hour, and that in rolling over down the bank, the roofs had to endure the tremendous wrench and impact of the 50-ton mass of the car, they proved equal to the task. The interior and exterior views of the chair car show that the roof, as a whole, remained intact, being crushed in only at one point, and there probably by some projecting boulder. The injuries to the passengers were such as would naturally result from their being pitched from floor to ceiling, and from ceiling to floor, as the cars rolled over; and to the wonderful strength of the framing and roof is to be attributed the escape of the

success in the South African war. In this sighting apparatus a small telescope is fitted to the barrel of the rifle or gun, and the marksman brings the object at which he is aiming, exactly behind a tiny point made by the bisecting of two capilliform straight lines, crossing at right angles upon the lens. When this position is obtained perfect marksmanship is assured. Dr. Common's greatest work, however, has been the manufacture of huge telescopes; and prior to the construction of the Lick and Paris reflecting telescopes, he had built the largest instrument of this character in the world. He devoted a great amount of his time to the discovery and perfection of a method for grinding reflecting glasses from three to five feet in diameter, and succeeded in making a five-foot reflector, with which he secured a photograph of the nebula of Orion. For this work he was awarded the gold medal of the British Astronomical Society.

Pelican Island in Indian River, of the coast of Florida, has been acquired by the Department of Agriculture as a government reservation. The step was taken to prevent the entire extinction of the brown pelicans which breed there.