

DESCRIPTION OF TRACK.

In making the tests the car was operated on the track of the Illinois Traction System between Champaign and Danville. This track was of the ordinary interurban construction, the rails 30 feet in length and 70 pounds to the yard, being supported by sleepers spaced two feet, centre to centre, and the ballast was mostly gravel. A very accurate survey of the track was made and the exact location of each pole determined.

SYSTEM FOLLOWED IN MAKING TESTS.

The scheme of operation followed in making the tests was to select a section of track free from grades and curves and of as great a length as possible. Owing to the fact that the kinetic energy of the car at high speeds was relatively large, and reading the speed record to the second decimal place rather difficult, no sections under 1000 feet in length were used, and as this division of the railway system contained a large number of curves, it was impossible to obtain suitable sections much more than 2000 feet long. A certain section of track was selected as the scene of operations for a certain day, and the car was run in both directions over this section as many times as possible. The regular service on this division being frequent, it was unusual to obtain more than forty individual tests in any one day, and the number of tests fell on some days to ten or twelve. The car was run to a point about 1000 feet from the end of the selected section, and brought up to the required speed some time before entering this section. While making the tests to determine the increase of train resistance due to curves, various curves of different radii, ranging from one degree to fifteen degrees, were selected, and accurate surveys made of the curves and sections of tangent track at both ends of the curves. The car was operated at a uniform speed over the section of tangent track before entering the curve, the curve, and the section of tangent track after leaving the curve.

CALCULATIONS.

The method followed in working up the data recorded on the charts was as follows. At each end of the sections selected a perpendicular to the base lines was drawn across the chart, and, using a templet to correct for the arc described by the recording pens, the exact locations of each of the pens at the times of entering and leaving the section were obtained. Perpendiculars were