down. No cross waying was ever permitted, as the intention was to have the rock embankment cut its way through the thin mattress of the dry surface of the muskeg; in this case the rock remained on the surface for about a year, and then gave way during train filling. Some time was spent in filling it, as its depth allowed the train gravel to move sideways, but eventually bottom was reached after 3,000 Hart car loads of gravel had been placed in it. The only real objection to its sinking, when it did, was that the gravel used was high grade surface gravel which had to be hauled about 40 miles, as track laying had not then proceeded far enough to reach the more northerly, and thus more convenient, sand pits.

The only midway divisional point was at Muskoka, mile 126 from West Toronto. As this point was in the rock district the grading for it was rather heavy, the finished yard occupying an area, apart from the main passing siding, of about 3,000 x 300 ft., much of which was solid rock that had to be lowered about ten feet. Water was obtained from the nearby Stewart Lake, but, as it is not allowable to pollute the Muskoka waters, the sewers had to drain into the swamp on the other side of the track.

The general mode of procedure through the rock country was to make the rock cut only about a third of the embankment, as this quantity of rock would have sufficient weight to cut its way vertically through the mattress, and as soon as bottom was reached the remainder could be made by train filling. The efficiency of this method of forcing the sink holes through is shown by the fact that, train filling once completed, the percentage of derailments has been at least as low on this new road bed as on that of sections twenty years old or more. This brings up an important question. If the intention is to have the weight of the rock cut its way through the mattress, and as it is only when it has done so and reached solid bottom that the earth filling becomes really effective, would it not be advisable, in some instances, before placing the rock fill, to cut right through the mattress parallel to the centre line, for instance, in the case of a thirty foot embankment, to cut two longitudinal ditches forty feet apart, and thus allow that whole section to sink vertically without deforming the surface at the side? Almost every case of deformation is caused by the sand or gravel floating sideways, and it does not become solid for some time.

Depressed temporary grades of 3% were allowed. In many cases small hillocks of rock were cut away to allow the temporary grades to descend to the center of the larger gulleys.

At mile 124, during train filling, a low rock embankment, while carrying an engine, gave way suddenly, and the engine sank with such force as to shear the nuts in the track for a distance of 1,000 ft. or more. Between miles 112 and 142 a number of embankments were train filled from temporary trestles, and little trouble was ex-