

amount of work done; and I think it right to call the attention of the Commission to what I have to say.

"The contract required the contractors to haul all stuff in the line-cuttings as far as it was required in the embankments, to an ultimate length of 1,200 feet, without any charge for extra haul; but the haul seldom or never was allowed to reach half the ultimate length before the contractors began to waste the stuff out of the cuttings, and to borrow other stuff to make up for the deficiency caused by the waste. As a rule, nearly all the boulders in clay cuttings and all the rock in rock-cuttings were wasted—that is, they were generally dumped out on the sides of the embankments, frequently outside of the specified width of embankments; but sometimes they were scattered over a wide area of the adjoining lands. One cutting of 7,000 cubic yards, at Hay Lake, could have all been put into the adjoining embankments without the haul exceeding 600 feet, and it could all have been put into one of the embankments, and still the haul would not have reached the limit of 1,200 feet; but the stuff in the cutting was all wasted, and other stuff was borrowed to take its proper place.

"Of off-take drains there are very many which, in my opinion, are utterly uncalled for. Off-take drains are not necessary, except when a great accumulation of water in the ditches would be injurious to the works. Vast numbers of these off-takes are in places such as flat, boggy ground, where no such accumulation could occur; yet in such flat, boggy ground (flat as shown by the length to which it was necessary to make the off-takes to obtain a few feet of fall,) off-take drains are made of lengths up to nearly a mile for the purpose of lowering the water in the railway ditches a foot or eighteen inches.

"In one place, at the deepest part of a little clay cutting, there is a large off-take drain made on each side of the railway, where a small culvert would have rendered the cost of one unnecessary.

"In several cases the deepest part of a rock cutting is selected as the proper place for cutting through the slopes of rock and making an expensive off-take, when all the water that can possibly pass through it, could be conveyed down the water-tables in the sides of the rock-cutting for a very small fraction of the expense incurred.

"In one case, where it is impossible that any but a very small quantity of water can ever pass through a stone drain built there, an excavation was made 80 feet long, 15 feet wide and 5½ feet deep, and double measurement was allowed for the excavation on the plea that water had to be contended with in the excavation—and this excavation was filled up with large and small boulders from an adjoining gravelly cutting, which boulders were paid for as rip-rap; all which excavation and rip-rap were unnecessary as the embankment there is made of such material as would allow all the water that can ever be there to readily pass through it without the slightest injury to anything; and the weight of the embankment on a soft bed was sufficient to make enough of depression without any excavation. This drain cost, as well as I remember the prices, very nearly \$1,000, an unnecessary expenditure.

"In another place a borrow pit, 500 or 600 feet long, was made on the high side of the railway. The bottom of the pit could, for a few dollars, have been easily drained, so that any accumulation of water in the pit would have been perfectly harmless to everything; but no less than three stone drains (the stones paid for at \$3.50 per cubic yard) have been built under the embankment, and short off-takes made from them; and, besides, there is a catch-water drain about 800 or 1,000 feet long, made round the borrow-pit so as to prevent all water from getting into it. One end of this catch-water drain leads into the ditch of the adjoining embankment, while the other end is made through about 100 feet of solid rock, and then