

Mr. Paxman. smoothly and well when provided with good wheels, carriages and axles. A few rudely-made ones were still working, and the question was not how they ran off the wires, but rather how they kept on for a single journey. With reference to the suggestion of sinking a shaft 60 feet and working out the gallery, and then going on another 60 feet, Mr. Willcocks seemed to have lost sight of the fact that the "Yellow" extended below the distance above named, and that the shaft must be sunk sufficiently deep to pierce the "Blue." Shaft-sinking, if judiciously done, could in some cases be used with considerable advantage. The water, after being used, had a slightly soapy nature, but the chief feature was its greater gravity. When breakages in the machinery occurred it was not for the want of soapy water, but because the mill had been allowed to stand still. The diamantiferous soil which settled at the bottom then became indurated, and the force required to pass the agitator through was thus very great. No person, however well acquainted with the work, would attempt to start the mill when in this condition. The theory of the turning on of clear water stopping the machinery was to the Author quite new; certainly no stoppage occurred in practice. He was indebted to Mr. Murray for the description and history of the discovery of the diamonds, and begged further to acknowledge the assistance rendered him by Mr. W. Westhofen, Assoc. M. Inst. C.E.

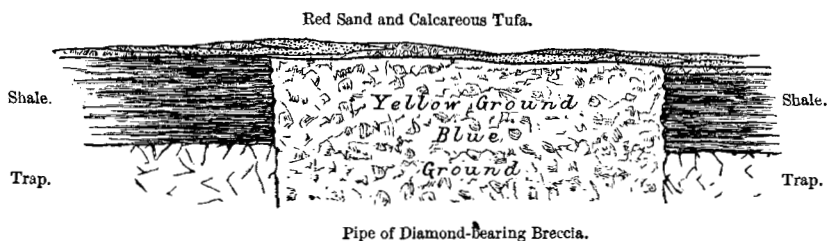
Correspondence.

Mr. Appleby. Mr. C. J. APPLEBY took especial interest in the Paper, because he had made the first engines sent to the Diamond Fields, and had designed the standing gear, which, so far as he could learn, had not been altered in any way. With respect to the engines, the Author appeared to think there was an absence of knowledge as to the type of engine best adapted for the Fields. This, however, was incorrect. The conditions were well understood and appreciated so far back as 1875, when the first three engines were sent out; but they had to be shipped in three weeks after the order was given, so there was no time for making the special type of machinery which the Author very properly advocated. Many engines were subsequently sent, but miners were proverbially conservative on the question of machinery, and in every case they ordered engines exactly like those previously dispatched. The great advantage of the double-standing wire-ropes was, that they were much safer and more durable than the single ropes used

prior to 1875, when he was consulted on the subject, and of course the two ropes need not be strained so tight as the single rope.

Professor A. H. GREEN supplied some notes in illustration of the geological conditions under which the diamonds occurred. Fig. 4 was a generalised sketch section of the Kimberley diamond mines. The surface of the country was very generally covered by red sand and sheets of calcareous tufa; these were purely superficial, and were now in the course of formation. They were found not only over the diamond-bearing pipes, but were spread over nearly all the country. Beneath these superficial matters the rock for many miles round Kimberley was shale traversed by a large number of dykes and intrusive sheets of trap. He had not yet examined the specimens in his possession, so he could not say for certain what the trap was, but very likely it was a dolerite. The

FIG. 4.



diamond-bearing stuff occurred in great pipes, rudely cylindrical in shape, running down vertically through the shale and its associated trap sheets. Sometimes, as at Kimberley, shale occurred at the top, and a trap sheet was reached some way down; sometimes, as at De Beer's, there was a trap sheet at the top and shale below. The diamond-bearing stuff was a breccia or agglomerate, and from the way in which it occurred, it presumably filled in the funnels or throats of old volcanoes. The material in the upper part of the pipe was generally distinguished as "Yellow Ground," that lower down as "Blue Ground"; but there was no difference between the two; the stuff was blue where it was deep enough to be protected from the action of the air, nearer the surface the iron had become hydrated, and this had changed the colour to yellow. Exactly the same change occurred in the shale. He noted one mistake of the Author, where he said, "The next stratum, varying in depth from 60 to 100 feet, is of the nature of a loose yellow gravelly lime." The Author was here mixing up the superficial

Prof. Green. coating of calcareous tufa and the "Yellow Ground"; the tufa often found its way down for some distance along cracks in the "Yellow Ground," but the two were perfectly distinct, and the tufa was never more than a few feet thick.

In pursuance of the notice on the card of the meetings, it was resolved to adjourn for a fortnight, in order to avoid the holding of a meeting on Whitsun Tuesday, May 15th.
