

153. While the tunnel is being widened out and footings taken out, and all that sort of thing going on?—I should say the power might be conveyed in a pipe.

154. If you were to work that tunnel on the eight hours from bank-to-bank principle, how long would the men actually work in the faces, taking into consideration the half-hour they have for crib?—It would depend on the means that you had for conveying the workmen to and from their work. If the means were rapid they would have much more time.

155. I suppose you know that we take them in now on trains drawn by electric motors?—I have heard that.

156. You said just now that it takes a man an hour extra to go to the face and back again. How do you know that?—It is hearsay evidence from the men. They tell me the time is just on nine hours.

157. That means that it takes half an hour to go in and half an hour to go out. They would then be working in the face—how long?—The men say they have to walk out: they do not always have the opportunity of riding. They have frequently to walk two miles to get out.

158. If it takes them an hour to come in and go out, and they have half an hour crib-time, it follows that they would work at the face six hours and a half for an eight-hours day: is that not so?—I would not admit that, because with an electric motor running the men in a couple of miles, there is no reason why they should not go in in a few minutes.

159. *Mr. Reed.*] In speaking of the climatic and other conditions, were you referring to both ends of the tunnel or only Otira? Do the same conditions prevail at Bealey as at Otira?—About the same.

160. *Mr. Okey.*] What is the objection to the housing-accommodation: are there not the same conveniences as on most of these works?—They tell me that they are not comfortable.

161. In what way?—They say that the huts are not comfortable.

162. On the co-operative works they have only tents: I should think a hut would be more comfortable than a tent?—It is a wild, windy place, and the wind blows through cracks, perhaps, and the huts are draughty.

163. You admit that there are improved wages at Otira?—Slightly, I believe.

164. Is there any complaint about the wages?—I hear more complaints about the conditions prevailing at Otira than I do about wages.

165. You think the difficulty in getting sufficient men is on account of the conditions?—I should say that that is the chief reason why men are scarce.

166. There is no difficulty about the wages, but about the accommodation and the conveniences?—That is what I find.

167. *Hon. Mr. R. McKenzie.*] What you stated about the weather-conditions at Otira and Bealey is only applicable to the winter months, is it not?—The winter there, from my experience, extends over nine or ten months of the year.

168. Do you know that men working for the Government in the Bealey Valley have had as good a time in the summer as they have anywhere else on co-operative works?—I could not tell you.

169. *Mr. Seddon.*] What is the measurement of these huts at Otira?—They are small huts.

170. They are in a gorge—the wind comes right down on them?—Yes. It is a most bleak, inhospitable place.

171. Are the huts lined?—I have not been there lately.

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FRIDAY, 6TH SEPTEMBER, 1912.

WILLIAM HAY GAVIN examined. (No. 7.)

1. *The Chairman.*] What are you?—I am a civil engineer on the Otira Tunnel works, employed by Messrs. John McLean and Sons (Limited).

2. *Mr. McLean.*] You have had considerable experience in tunnelling, have you not?—Yes.

3. Will you give the Committee just a short *résumé* of your experience in regard to tunnelling in New Zealand and in other parts of the world?—With the exception of the first one, I completed the first six tunnels on the Midland Railway from Springfield. I was in charge there for the Public Works Department when the Government reopened the works. I also had experience in partly building two or three tunnels beyond there. In the United States I had charge of the Flower Pass Tunnel for the railway company, and that was a mile and a quarter long. With regard to the tunnels I built on the Midland Railway for the Public Works Department, I constructed those on the co-operative system, so that I was both contractor and engineer. The Arthur's Pass Tunnel makes about the tenth or eleventh tunnel I have been connected with.

4. Will you give the Committee some idea of the difference in the cost of the tunnels, comparing the material in the Otira Tunnel with that in the Midland Railway tunnels?—I have a record with me of the longest tunnel that was built on the Midland Railway. It was 26 chains long. There was very little blasting done in the tunnel, on the first 2 chains only 27 lb. of explosives being used.

5. And have you the records of the cost of that tunnel?—Yes. The cost was about £27-odd per running yard, and the tunnel was in area only about two-thirds the area of the Otira Tunnel.

6. So that there could be no comparison between those two tunnels at all?—No, except by making comparative allowances.