277. Will there be anything steeper than that?—No.

278. Are you sure of that?—I am perfectly certain; and even that could be done away with by lengthening the line.

279. How much?—It might, perhaps, make four miles difference in the total length of the line. By lengthening the line a gradient of 1 in 70 might be continued throughout.

280. That is, 1 in 70 would be the steepest?—Yes; I feel confident of that, and can prove it on the plans I possess.

281. What are the sharpest curves on that line as now laid out?—Nine chains.

282. Are there many of them?—Yes, a good many of them.

283. Are there any reverse curves?—None without a short piece of straight.

284. And if you lengthened the line by these four miles, would it make any difference to the curves?—No, I think not; the country is much about the same all through. The slopes on the hills are generally very light indeed. There is no country such as the Rimutaka.

285. *Mr. White.*] Which line are you referring to as having no worse grade than 1 in 70?—The central line.

The Chairman: His evidence is all confined to the one line.

286. *Mr. Fergus.*] How long were you in that country altogether?—Eighteen months.

287. How much of that time did you spend in exploration?—The time occupied by survey was about three months. A great deal of the time I was delayed by Maoris.

288. How long were you delayed by Maoris?—I have described all that in my report.

289. Then, what is the actual time you were exploring?—I think about six months.

290. Do you think an aneroid survey is sufficient on which to base an estimate of any line?—I feel confident it is.

291. An aneroid survey alone?—Yes. The first survey of the Rimutaka, and several other lines I have been connected with, came out within a very few feet—under 20.

292. Do you think it would be possible to save the £84,000—reckoning £400 per mile—which you put down for a road, by constructing the line at each end, and running the materials over that way?—A great deal of it could be saved, no doubt, in that way; but, of course, the necessity or otherwise of a road would depend on the speed with which it was desired to carry on the line. If you wished to begin at several points at once, you must have a road.

293. But would not that increase the cost of the line?—Not very much, I think.

294. There is the cartage of hauling materials and so forth.—The line would be a very long time in constructing unless you made a road.

295. Then you think it would be necessary to have a road?—I think it would, over a great part of the line.

296. *Mr. Fulton.*] Would £400 per mile make anything of a road?—I think it would. That would be at the rate of £5 per chain. Of course the road would not follow the railway exactly.

297. What sort of a road would you make for that money?—Take the timber off where there is bush, and form, say, 16ft.

298. That sum would not metal the road at all, would it?—I think it would where it was necessary to metal it. It would not be necessary in all places—in the open country, for instance. In the bush, of course, the land cuts up very quickly.

399. What are the sharpest curves allowed by the Government?—7½ chains are allowed now.

300. *Mr. Larnach.*] I understand there are no curves on this line under 9 chains?—None.

301. How many curves are there like that?—I could not tell you.

302. As far as you remember, are they numerous?—There are a good many in the valleys. But of course you get long valleys that are very straight, and don't require any. I should like to have an opportunity of explaining the sections to the Committee, if possible.

The Chairman: We will come to that directly.

303. *Mr. Larnach:* Don't you think, if there is to be much traffic on this road, a mere formation of it will not be sufficient for carrying railway material?—It would become useless, I should imagine, unless it were metalled. I think it would be. Most of it could be metalled even for the amount estimated. The road would be for the conveyance of stores for the labourers, and contractors' plant, &c. Railway materials would come along the line.

304. Is there much rain along the line?—Not more than usual in other parts. A good deal of the country would stand without metal.

305. *Mr. Fulton.*] What is the whole length of tunnelling?—The longest tunnel is 1,214 yards. The rest are only small ones.

306. *Mr. Larnach.*] If this line were proceeded with, and a road made, would that road be of much consequence to the district afterwards?—I don't think it would be possible to run it parallel with the line.

307. Would it be of much use after the railway is in operation?—Decidedly. My idea is that it would not be advisable to run the road by the side of the line, but run it into points where supplies could be obtained from the ends of present roads, and so on. Most probably the length would be very considerably under the length of the whole line.

308. Do I understand that this estimate of yours is not really to make a road running continuously in the same direction as the railway, but to make roads coming from other roads?—Yes. Running alongside the railway would not be of much benefit to the district afterwards.

309. *The Chairman.*] I understand from the general tone of your evidence that the road is wanted during the construction to enable the working population on the railway to get their stores, also to get timber and similar materials required for the construction of the railway, and that two hundred and ten miles is only an estimate of the distance? It does not necessarily mean that the two hundred and ten miles will be alongside the railway, but merely to connect with present roads?—Yes. There are several points from which connections could be got.