

the last Commission, but there is still room for improvement. I consider they might be improved by having ball bearings. The track brake is governed by the weather. It may be working splendidly in the morning, then, after a shower, the blocks get cut right down; and the wet on the straps makes the application much more difficult after rain. They did not use the brake blocks in Australia, though I think they put on a couple for trial. The track brake and air brake acted well in Sydney—that is my experience. The sand gear has improved since the last Commission, but there is still room for further improvement. I drive on the College Hill route. The sand goes down to both rails on my car. It is intermittent, but the pedals do not work so well here as they do in Wellington.

By Mr. Myers: In my opinion the air brake and the present track brake would be an effective braking apparatus for use in Auckland.

By the Chairman: I worked in Sydney on grades 1 in $7\frac{1}{2}$. It was by Darling Street extension, in Balmain. It is the opposite side to Mossman's Bay. We had straight air brakes there, on trailers, not automatic. There were dead trailers on the North Sydney line, but now they have coupled cars there. I had no trouble in handling my car on that steep grading—none whatever. In greasy weather I would use the sand. I say the track brake worked all right, and it would go down as well after rain as it did before, but it would require much more effort to put it down fast; but it would act so long as the track-block is not worn right down. I have worn it down in less than a day, and had to have new track-blocks. When the blocks are right down the brake is practically useless. There are facilities for fitting the blocks on in Queen Street. With regard to the application of the track-block, I have had many of them very easy. It has certainly improved since the last Commission, and, as a rule, they work fairly well; but there are times when it is a difficult matter to put it on, and I should say a 200 lb. pressure is required sometimes. I consider the air brake alone will pull up the car on the Parnell Rise, if under control. At ten miles an hour, with a full load on, I could stop the car with the air brake alone with greasy rails.

By the Chairman: Yes, without the track brake being down.

By Mr. Fitt: Ten miles an hour or any other speed on that Rise would be governed by the condition of the rail. I am not prepared to make a definite statement as to the yards. I could not give my opinion upon that, as I do not consider it is a question I can answer honestly. It would only be a shot at random. I applied the emergency brake to pull the car up on College Hill, and also near Herne Bay. It was a very good stop, sufficient to move the people inside. I could not make a statement as to the number of yards; I do not know for certain.

DAVID TAYLOR duly sworn.

Examined by Mr. Rosser: My name is David Taylor. I am a conductor on the Auckland tramways, and have been so for fourteen months past. I was a tramway employee in the Burnley Corporation Tramway Company in England, and worked as motorman there. I had experience there of the magnetic brake. It was an experiment. They installed two. There was a failure of that brake. It was on a falling grade, about 1 in 17. They discarded them altogether; they would not put them on the heaviest grades, as the test was a failure. They shifted it on to the scrap-heap. They used only the hand-brake the same as you have here now, but they had very good sanders. There was also a patent ratchet back-preventer, put on to prevent the car from slipping back. It was worked automatically. You switched it on in the direction in which the car was travelling, and if the car tried to get back, a part went into the groove of the wheel and prevented the car from going back; it is not possible to go back. The reason of the brakes being discarded was that they were effective enough sometimes, but would stop the car very suddenly, knocking the people about, and at other times skidding the wheels, while still again they would not take effect for a long, long way. On one occasion I saw the brake fail. It was in Shakespeare Street, for a matter of a quarter of a mile, and afterwards it worked all right. The brake had been working all day. I have worked air-brake cars and one on a locomotive. I have never had any failures with the air brake, and I have done speed at thirty miles an hour. I should not like to try the magnetic brake, as I could not place sufficient confidence in it.

By Mr. Myers: The brake would skid the wheels. It would have a severe application occasionally, and skid the wheels, or lock the wheels and skid on a greasy rail. In Burnley we have a good many hills, something like Auckland. In Burnley the hand-brake was considered sufficient. It was something like what you had here, with a cast block, not a wooden block. The track brake here is as good as the one in Burnley, and is a very good brake. I certainly cannot call it a bad brake. The hand-brake here is pretty much the same, but I cannot say it is as effective, though it is on the same principle. In Burnley the hand-brake is considered perfectly good, and was effective, with a good sand gear operating on all four wheels. As to being easier on the man, the man is paid for his work. I say the air brake and the present track brake would do well for Auckland. I have a great idea myself for the vacuum brake. You can read it as it is working. I am perfectly well satisfied with the present air brake and track brake. If you give me the same gear as in Burnley, then I am all right; but if I have no confidence in it, then I should want something better, and that I shall find in the air brake, I think, as I am quite satisfied with that.

By the Chairman: If you have something good to stop a car, that is all that is required. I consider the arrangements in Burnley were effective. We had equally heavy grades in Burnley, 1 in 9—that is about the same as here. There is also a grade of 1 in 14.

JOHN WILLIS duly sworn.

Examined by Mr. Rosser: My name is John Willis. I am a motorman in the employ of the Auckland Tramways Company, and have been there about two years. I worked for the Christchurch Tramway Board for about three years prior to that. I worked the air brake there. They