

had resulted in the cars upon the Auckland system being distinctly underbraked, and much of the trouble which has arisen in connection with the brakes was immediately accounted for.

It was decided that before further trials were made the brake-leverages on car No. 75 should, as a temporary expedient, be increased to an extent which would give block-pressures more comparable with the weight of the car. This was done, and, although the full benefit which should have been derived therefrom was not, on account of the structural weakness of the gear, obtained, a vastly improved control resulted.

PROCEEDINGS AT WELLINGTON.

After completing the brake-tests at Auckland, the Commissioners adjourned to Wellington, where evidence was brought forward by the Wellington City Council to show that the magnetic brake was a safe and suitable type of brake for use in hilly districts.

The Commissioners inspected the brake-equipment and repair-returns; they also witnessed a demonstration of the efficiency of the magnetic brake, which was not altogether convincing.

At this stage of the proceedings a request was received from the Tramways Committee of the Dunedin City Council for the Commission to sit in Dunedin, and examine there the working of the magnetic brake. No extended experiments were therefore conducted in Wellington.

PROCEEDINGS AT CHRISTCHURCH AND AT DUNEDIN.

The Commissioners sat in Christchurch to hear evidence as to the results which had been obtained in the working there of the pneumatic brake over a period of some years. They also conducted a series of experiments, and subsequently proceeded to Dunedin, where evidence was led by the tramway authorities with a view of showing that the magnetic brake was a satisfactory arrangement for the control of cars on steep gradients, and was not liable to failure.

The Commissioners here conducted a series of tests of this brake.

THE EVIDENCE.

For convenience of revision, the evidence given before the Commission may be divided into four sections :—

Section 1: Evidence relating to the efficiency and reliability of the existing hand-brakes on the Auckland cars.

Section 2: Evidence relating to the electro-magnetic combined wheel and track brake.

Section 3: Evidence relating to the pneumatic wheel-brake.

Section 4: General evidence.

Evidence relating to the Existing Hand-brakes.

A large amount of evidence was given by motormen before the Royal Commission which sat in July, 1908, as to the bad condition and difficulty of application of the brakes on the Auckland tram-cars. It was then stated that several men had been severely injured by the great physical effort entailed in their use, and also that the cars were not properly under control.

Brakes hard to apply.

The evidence of motormen before the present Commission was generally to the effect that though a great improvement in the upkeep of the brakes was noticeable, they were still hard to apply, and very severe upon the man.

An independent expert witness (L. Birks, pages 35 and 36 A) agreed that the brakes entailed a good deal of hard work on the men; and it was stated that the company recognised the exertion required, and were prepared to meet the point (F. E. de Guerrier, pages 40 and 41 A).