

Skid-proof attachment to be tested.

It is desirable that the skid-proof attachment should be tested in the Dominion, with a view to its ultimate adoption by the tramway systems on which the magnetic brake is used.

Mechanical attachment to be fitted.

Also, that on such systems all cars running on gradients of 1 in 15, or steeper, should be fitted with the mechanical attachment (hand gear).

On cars fitted with the magnetic and with hand wheel-brakes all "coasting" should be done on the former (electric or hand application), and its use should be compulsory for both service and emergency stops.

Emergency and service stops to be made by same appliance.

It is necessary, in order to insure the emergency brake being in working-condition, and its application instinctive, that both emergency and service stops should be made with the same appliance, and differ only in the degree of force used.

Standard Tramway Brake Gear.

(6.) That the standard both of design and construction of tramway-brake gear is, as a whole, below that dictated by railway practice.

Sanding-gear.

(7.) That efficient sanding is necessary for efficient control.

The majority of sanding-gears in use on tram-cars are crude and unsatisfactory; the hopper arrangements are poor, and the method of delivery on the track bad, the terminations of the sand-pipes being in some cases 6 ft. in advance of the wheels: the sand is thus delivered far away from the rail on the curves, and even on the straight the greater portion may be blown away in windy weather.

In other cases only one rail is sanded (involving a very severe stress on the axles), and again in others only some of the wheels receive any benefit from the sand.

The sand-hoppers should be provided with lids, the valves be designed to work freely, and the pipes so arranged that the sand is delivered immediately in front of the leading wheel on each rail. Fan-shaped terminations should be fitted to the pipes.

Air-sanding should be adopted on cars fitted with the pneumatic brake.

Trailers.

(8.) That where "trailers" are used they should be fitted with brakes actuated by the motorman of the electric car.

Speed-indicators.

(9.) That a few cars on each system should be fitted with speed-indicators, in order that the motormen may become accustomed to correctly judging the speed at which car is travelling. Low speeds are invariably under- and high speeds over-estimated by untrained men.

Having narrated the course of their investigations, and expressed in general terms the conclusions to which these investigations have led them, Your Excellency's Commissioners have now the honour to state with regard to the matters specifically referred to them,—

(a.) That they are of opinion that, having regard to the grades of the Auckland tramways and the conditions under which traffic is there conducted, the brakes already adopted are not suitable, efficient, nor sufficient for use on these tramways. Underestimation of the weight of the cars has led to their being equipped with brakes of insufficient power and capacity. A far larger amount of physical force than was apparently anticipated is required for their application. The brake-gear is too light in scantling and too insecure in anchorage to safely and effectively transmit this larger force. That the cars are too heavy, speeds too high, and gradients too severe for hand-power to be alone relied on for actuating the brakes.