increased by the steel insert shoe With the cast iron shoe as Mr. Adams said, the metal flows into the tread and cuts much deeper than with the steel insert shoe, but I have no data on this question, so cannot be positive.

In reference to the question of our Vice-President, Mr. McRae, on the manner of applying and releasing brakes, or of stopping trains or cars, I presume he wishes to know the general practice followed which gives the best results. Speaking of passenger trains and using the different brakes, viz., the high and low speed, I think the general practice is with the high speed, to make about a 10 pound application by making three reductions, viz., 5 pounds for the first and 2½ pounds each succeeding reduction and more if necessary to reduce the speed of the train sufficiently to allow of a second application being made, which would bring the train to a standstill with very little effort, always keeping in mind that the brakes must be released before the train is brought to a standstill to avoid the back lurch caused by the tilting of the trucks. The same argument holds good for the low speed brake, which in service is twenty per cent. less efficient when full set than the high speed brake.

Now speaking of the manner of handling brakes on street cars, I presume they do not use the automatic brake on street cars, but use the straight air appliance. I have noticed some of the motormen, when bringing the car to a stop, will use a very heavy application, and should a passenger be on his feet he will generally make a hasty movement toward the front door, this is why I am not in favor of heavy reductions or applications at any time except of course where there is danger. I certainly think, and experience has taught me that, a vehicle of whatever class you may mention should be brought to a standstill without the passengers being aware that a brake has been applied and this can only be accomplished by gradual applications and the release so graduated that no shock will be felt.

Chairman,—

What about the insert shoe for coach work?

Mr. Black,—

I understand the tread wear is decreased rather than increased by the steel insert shoe contrary to what Mr. Adams says in his paper that the iron flows into the part of the tread where the rail comes in contact, but I have not had experience on this question and cannot speak positively.

Chairman,—Shall be pleased to hear from Mr. Harkom.

Mr. Harkom,—

As I am the older, I think I should have the privilege of hearing Mr. Patterson first.