

get this data we would arrive at something definite, and until we get that, we could not come to a proper conclusion.

Regarding street car wheels, in my opinion the relieved insert shoes would be an advantage as they are really driving wheels. I think, however, a casing should be made to carry the braking portion, and the wheels be very carefully selected, the treads being ground true and all roughness removed from flanges and outer edge of treads.

Chairman,—

I would like to ask Mr. Harkom in what class he would place the grey iron brake shoe having a reinforced back for ordinary car service.

Mr. Harkom,—

I think it is a very good shoe indeed, but as I have said before, until we get data on the cost, we cannot decide. For cast iron wheels in that service I do not think I would care much about insert shoes. There are features about the heating of the wheel that we would rather be without and there are also imperfections in the surface which are apt to show themselves, resulting in locking and skidding. All these points must be considered, and I do not think the matter should be decided until it is taken up by a committee, with proper material at their disposal, for a proper test, and data gathered whereby a satisfactory conclusion could be come to.

Mr. Duguid,—

In my position I do not know much about the wear of the brake shoes. The only thing that I am brought into contact within regard to this, is the wear on the tires. As Mr. Mooney explains we have not many steel insert shoes, and I know that the cast iron shoes do not wear the tire much. We have records of the thickness of the tire before engine is sent out of the shop and noted the difference on its arrival back again, and it is found the difference is not much, but in some cases we find it is worn away down. Perhaps that is due to a defective tire or perhaps the steel insert shoe that Mr. McNichol put on was the cause of this. I certainly think there is not much wear on the tire from brake shoes. We hear a great deal about the amount of wear of the tires by the brake shoes, but we do not see it at the shop as the present kind of shoes used do not wear the tires.

I think there is a great deal in the shoe being the proper radius to fit the wheel. Perhaps the tire is $\frac{1}{4}$ inch when we put it on and about the time the shoe gets down to its proper surface it is worn out. I think if a brake shoe was made 3 inches thick and a proper radius to fit the tyre I do not see any reason why it should not last for a long time. No wonder the shoe breaks at the first application as they are often not a proper radius.