vice. Any shoe with a chilled surface will cut the head. There are some of the insert shoes that give very good results, one I might mention is the Allen & Morrison, This shoe has an insert of asphalt and steel turnings, but great care has to be exercised in the manufacture of this shoe, if not, the wall between the insert and the flange has to be put in a damp mould, and will cut the car wheel. This was our experience. I favor the grey iron shoe for the reason that in quick rapid transit and heavy cars in order to make quick stops you have to have a shoe that will grip the wheel.

Mr. J. W. Harkom,—

A remark has been made to-night as to why the shoes on locomotive driving wheels are not made thicker. Our friend, Mr. Markey, might tell us why this is so. It is certain we do not wish to have much heat developed between the shoe and the tire. The ordinary shoe is about 2 or 2½ inches thick, and there is no reason why it should not be made 1 inch thicker. In case of an insert shoe there would be that much more metal at the back to carry the insert and hold it in its place and to absorb heat.

Mr. J. Markey,—

One reason for the adoption of the present thickness on the present locomotive brake shoe in railroad practice, is the limit of travel on your brake gear. The travel of the piston on the locomotive brake cylinder is from zero to 4½ inches, and the brake shoe must be in proportion to that.

Mr. C. A. Jefferis,—

I think the great trouble is that there is not space enough to get in a much thicker brake shoe unless there was more distance between the wheel centres. At present there is not very much to spare on a great many engines. I do not think you can increase the brake shoe very much with the average engine, especially the American brake type which comes between the drivers.

Mr. Harkom,—

That does not exactly answer the question as I intended to put it. It is not a question of wearing the shoe any more. I would not allow the shoe to wear any further than before, but would make it set farther into the socket. The head might be made a little different shape; that is to say that the fulcrum distance from the fit of the shoe and head could be modified and in that way get a little more thickness on the shoe. I would try to make the socket fit so that there will be evidence when the shoe is worn down, that it is time to change it. Of course I have seen them without a shoe at all. I remember once seeing a brake beam doing the work.