

a train. Until such time as they are able to unite the different parts of the shoe, or fusing the back on, they will not be able to get the highest efficiency out of the composite shoes as was intended.

In passenger car service, which I spoke of, which as you know is nearly similar to the street railway service, the efficiency is less owing to the small diameter of the wheels and the numerous applications of the brake, which in turn heated the shoe greatly and caused it to crack and fall apart. Another thing that I omitted to say in connection with the construction of these shoes was the well known fact that when hot the cast iron comes in contact there is an excessive shrinkage which in turn starts a small incipient fracture, particularly at the corners. When these shoes are heated to any extent these fractures become more pronounced and ultimately work their way through the whole structure; that, in my opinion, is the trouble with the composite shoe of to-day. If it were possible to keep these composite shoes intact without cracking there is no doubt but that the life of these shoes would be four to one as compared with the grey iron shoes.

In switching service the brake shoes are hot nearly all the time owing to the frequent application of the brake, and, of course, this is hard on the tires. The amount of tire wear to-day, however, is not taken into consideration, owing to the fact that there is not the trouble experienced in turning up the tires as formerly was the case, as we have now the high speed steel which permits of this work being done easily, where as in the earlier days this was a matter for more serious consideration.

Now, referring to the statement made relative to the wear on the tires: the application of the brake shoe on the tires is not a factor to be considered as far as the wear on the tires is concerned, as the wear is simply proportionate to the weight of the engine and the work it has to perform. This wear is still further increased by the frequent use of sand on the rails when starting a train and the slipping of the engine. Besides the brake shoe of to-day only comes in contact with the tire and that portion of the wheel that extends beyond the rail, and as stated before, we would much prefer a brake shoe that would really keep up with the wear on the tire, or in other words, wear down that portion of the wheel that is not in contact with the rail as fast as the portion that is.

When I came here to-night I did not know what the subject was that was to be discussed, and, unfortunately, did not prepare myself with any data, but wish to thank you gentlemen for the time you have given me.

Mr. McLellan,—

About a year ago I conducted some experiments with Mr.