take in the larger parts of the larger locomotives will be necessary; in fact the companies may look to the expense of a new railway, less the right of way and road-bed, to meet the change, all in addition to almost the total loss of the rolling stock, rails, bridges, etc., as all of it can only be scrapped at best, as when the change on a few of the trunk lines takes place, all other lines will have to follow or they could not compete, so that old rolling stock will be discarded, hence the great loss: so that when all the cost of this change has been correctly figured it will change the net receipts after the interest has been paid on many milions of outlay. Again, the maintenance of the new heavy rolling stock, and the wear and tear of the rails, bridges, road-bed, and rolling stock itself, will be much greater. The same number of bearings will have greater friction, hence a large increase of lubrication and wearing material. The road-bed and bridges will suffer in proportion; the extra friction, which will have to be applied to the wheels to stop these heavy trains, and to moderate their speed on down grades, and likewise on the pull-up grade—the extra adhesion required to the rails—all this will cause quicker destruction, and again the accidents.

While it is strange to say that the system of steam surface railways has been in existence about sixty years, there have been comparatively no improvements outside of the enlarging of the cars and locomotives, and making them stronger and more comfortable for travellers, and indeed following the extravagant luxury of hotels, etc. Outside of this the system is comparatively the same. The speed of passenger trains has been increased about twenty miles per hour in forty years. The cost of transit for persons and freight remains about the same on the all around average. Regarding accidents: While various devices have been applied, the only one which has been of any consequence in minimizing the number of accidents to the employees is the automatic coupler, which is still far from perfection. The number of accidents on railways of all kinds and under all circumstances have been continually on the increase, and the cause of this is that the competition of railways has become greater as new railways have been built continually, and railway managers have had but one object in view, and that is, cheapness of operation of their line, so that cheap material and construction has been used; anything that would call for a little additional expense for the minimizing of accidents not being entertained. The crowding of railways into large cities has become so congested that accidents are almost of daily occurrence. Now, what is to be done to insure safety of travel on railways—quicker transit?

The elevated electrical railway is no doubt the railway of the future, and as England gave birth to the first system of steam railways, that country is about to give birth to the coming system. They are about to build an elevated railway in a district full of railways, that is, between Liverpool and Manchester. This proves that they feel sure that the new mode of transit will and must be this system, that will gradually take the place of the surface railways, both for passengers and express freight. First, there is the surety that an elevated railway can be made so as to insure positive safety from all accidents whatever, running at 100 miles per hour, or more, because being elevated no contact with moving or other objects on the ground surface will be liable, no accidents from floods or washouts, landslides, or misplaced switches will occur, nor from broken wheels or rails, or any kind of collisions resulting from the mal-intent of anyone putting anything on the track. In the case of trains following each other, the connections would be cut from the power of the following train by the operations of the first train, which might be stopped from any unforeseen emergency; so that the following train would have no propelling power in case of the necessity to stop the first train, and the electric signal would automatically strike the bell on the train that followed. As to falling off the track, that would be prevented by a gab grip that would follow the T of the top cord of the truss, so that it would be impossible for the wheels to mount the rail or get the body of the car lower than the top cord of the girder, only four inches distant. The side of the car is also protected by the sides of the girders, which have a flat, smooth plate running on both sides, which would come in contact with rollers fitted on the sides of each car. There would be no snow to ever block the line or cause any expense or accidents; no grades of any consequence, so that the uniform speed would be constant; no short curves to create danger or extra friction, the track would always be uniform and the cars would always run very smoothly; no dust and cinders or grit to cut up bearings and the machinery, thus all axles could be made to run smoothly in ball bearings with comparatively little lubricant, and the cars would be free from smoke and dirt of any kind.

One can fancy the comfort to travel in cars that are perfectly safe, running smoothly, with good and clean ventilation, also the enjoyment of looking over all the surrounding country as a good panorama. The electric single rail projected by F. B. Behr, for the elevated railway to be built from Liverpool to Manchester, is not the style of railway that can be practically successful. With the single rail system, the one wheel would not be sufficient to attain a very high rate of speed, as the one rail system would cause the wheels to slip, the extra friction would be a great detriment, which would be caused by oscillation that must take place from the uneven loading of cars, wind, etc. While the new system invented is perfectly free from any interference from the above causes, and the railway itself can be built much cheaper, lighter and safer, the cars remain the same type as the surface cars are at present. Of course the cost of building an elevated railway would be greater on the first outlay than a surface railway, on account of the height it must be made at some places, such as crossing rivers, towns, etc. This will require pillars or piers to be made very heavy and strong for perfect safety. But on the other hand the mileage can be reduced on the average at least 25 to 30 per cent. There would be comparatively no right of way to pay for, as only the pillars will take up any valuable space in the country, and very little anywhere. No embankments, no ditches, water culverts, stone or brick arches for roadways, no tunnels to be cut through mountains, no fences, no men to guard level crossings or on the track, no accidents to trains on crossings, and no expense caused by the killing of people or beasts on crossings, and no ballast required, which with its maintenance is a very large item.

After all the above items and the constant maintenance of the same is carefully summed up, it will go