

not by the railway companies. All the public ask or expect of the companies is that they will keep their cars clean and in repair. This in most instances the public do not receive, nor will they get it as long as there is but one class of cars provided, and one fare charged for high and low, rich and poor, saint and sinner, clean and unclean.

RATIO IN WHICH RAILS AND ROLLING STOCK DETERIORATE WITH DIFFERENT
VELOCITIES

It is impossible to give any mathematical answer to this question, nor could there be without having two roads laid at the same time, side and side, with the same iron, gradients, curves, sleepers, fastenings, ballast, number of stoppages, &c., and run with equal weight engines at different velocities. The answer must be a general one, and can be no more than an opinion. My belief is that the duration in the life of the rails, engines, and cars would be increased over one hundred per centum by decreasing a speed of forty miles to twenty miles per hour; and I believe that nearly the same result would be found between speeds of thirty and fifteen. Again, with the same track, the iron would last longer with the same velocities by using twenty-ton engines, with corresponding trains, instead of forty-ton engines and trains to utilize their tractive power.

Having answered all questions, I must now apologize for not having done what I proposed—give categorical answers instead of the rambling and digressive nature of this paper, and for having introduced many things apparently foreign to the subject; but, thinking and believing that there may be an occasional line or idea in it worthy of notice, and that may in some way directly or indirectly assist in railway reform, I respectfully submit it, and remain, colonel, your obedient servant,

W. W. EVANS.

Lient. Col. J. H. SIMPSON,
Corps Engineers.

APPENDIX M.

UNION PACIFIC RAILROAD COMPANY, ENGINEER DEPARTMENT,
13 William street, New York, January 29, 1866.

COLONEL: I have the honor to acknowledge the receipt (some weeks since at Omaha) of your circular letter of the 18th of December, 1865, accompanied by a circular from the honorable Secretary of the Interior, in which you invite my opinion on several points connected with the construction and operation of railroads, with a view of laying it, with others of the same character, before a board of "government commissioners, directors, and engineer of Pacific railroad," for the purpose of "aiding the government in establishing such a standard for these roads" (the Union Pacific and its branches) "that, when finished, they will subserve the purposes for which they are built, and be a credit to the nation."

A reply to your communication would have been forwarded at an earlier day had you not informed me, in person, that the meeting of the board had been postponed from early in January to early in February.

The position which I have the honor to occupy, of consulting engineer, of by far the most important of the roads referred to in your letter, might be regarded as placing me in a position of some embarrassment, and possibly of warping my judgment in relation to the subject-matter of your letter; but I shall endeavor, in what I may say, to be entirely frank, as well as independent of any interests which I may be supposed to represent. I shall claim your pardon,