

memory taken place in the transportation business of our country. It is a far cry in events & accomplishment from the stage coach & canal boat to the automobile & the Empire State Express; but the actual lapse of time covered by these tremendous changes is so comparatively slight that, although we take them as calmly as we do our breakfast or our newspaper, we know, if we stop to consider them, that we are daily beholding miracles. While America's natural resources are primarily responsible for her industrial greatness, it is safe to say that to her agriculture, manufactures & trade, the railway has been & is increasingly the most indispensable handmaid; & as witness that they have appreciated her services, there stands to-day our railway system, the greatest of the world.

Just as the shoemaker who started with his last & bench in his little shop 40 years ago has, in order to meet the increased demand for his wares & the competition which that demand has induced, been obliged to expand his small shop into a great factory with rapid & economical machinery; so has the railway, whose business is the manufacture & sale of transportation, had to increase its scope, enlarge its plant & introduce more wholesale methods of doing its business. As the demands put upon it have multiplied, it has been necessary for the railway to improve the tools with which it manufactures the transportation that it sells; & it is but natural that the most crying demand, namely, that for car capacity to carry the passengers & freight, should have first been met. It was quite as obvious that as it requires no more men to

handle a train that will carry 300 passengers than one that in the old days would have carried but 100, the carrying capacity of each train should have been increased. Also it is plain that it will require a more powerful engine to haul a lot of large cars than a few small ones, & it doesn't require a railway expert to demonstrate that if a locomotive pulls a train by the force of the adhesion of its driving wheels to the rail, you must double the amount of weight on those driving wheels if you wish to double their power of sticking to the rail & exerting their hauling force. Thus we see that the tendency has been continually toward increase in weight of trains, & one often wonders when the limit will be reached.

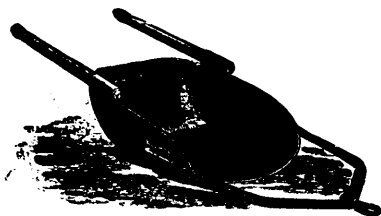
It is this great increase in the size & weight of engines & cars & of the loads that they carry, that has been the most noticeable feature of our railway progress, but right here is the point where the average man (& too often in the past, I fear, many a railway official) has stopped noticing. For the same reasons that one does not, while spending a pleasant evening in a luxuriously furnished house, concern himself with the quality of the masonry in its foundations; so most of those who ride in railway trains, though gratified perhaps by the comfortable furnishing of a passenger coach, seldom have a thought for the foundation of it all—that "court of last resort" in railway operating, the roadway & track.

In the building of American railroads widely different conditions have generally prevailed than in Europe, for while those of the latter country were built chiefly for the needs of an

existing population, and hence could be constructed in a substantial & enduring manner, our own have largely been projected in regions of sparse population, & under traffic conditions so uncertain, that only the smallest possible outlay & cheapest of construction were justifiable in the beginning. In a word, the European roads were built to supply an existing demand, while the American promoters had, in a large measure, to create the demand before supplying it. That the enormous business which their enterprise would develop was little realized by those whose capital & energies built our earlier lines, is strongly evidenced by the almost uniform failure, until within the last few years, of the track to keep pace with the traffic that it has been forced to carry. It is a fact, too little recognized in some quarters, that it has been only the vigilance & hard work of our maintenance of way officers, & their ability "to do with one dollar what any fool could do with two," that has in the past kept a good share of American roadbeds in a decently safe condition to run trains over.

But a new era has opened within the last 10 years. The profits from the earlier railway enterprises were so great that the temptation to build too many was too strong to be resisted, & the decade following the Civil War saw an abnormal increase in railway construction. It has required until the last dozen years for our increase in population & industrial development to bring about approximately those conditions under which the European roads were built. In other words, the country's railway mileage has caught up

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