THE EADS SHIP RAILWAY—A STEAMER IN TRANSIT.

over any inequality of the rails which may happen to exist. The wheels are hung independently—that is, each is separate from its fellows, having its axle protruding on each side sufficiently far to furnish a proper bearing. The breakage of any one wheel, therefore, would not affect any other wheel, and if even a dozen were to break, the great number that would be left would possess such an enormous surplus of strength, compared with the broken ones, that derailment may be considered as practically impossible.

The vessels will be hauled across the Isthmus by powerful locomotives. The engines, such as have been built recently by the Baldwin Locomotive Works for the Dom Pedro Railway in Brazil, would do the work. The company who built them guarantee that three such engines, weighing, ready for service, 224,000 pounds each, will haul the maximum sized vessel at the rate of fifteen miles an hour, if necessary, on grades up to twenty feet to the mile. The railway traverses a succession of valleys. In the hilly part of the Isthmus, in order to save heavy construction work, it is necessary to make abrupt changes of direction, as it would be impracticable to move a rigid carriage of such great length with a vessel upon it around a sharp curve. These changes of direction, five in number, are made by floating turn-tables. These are simply great pontoons or floating docks, which are placed in a segmental basin of masonry or concrete. When the vessel is drawn upon the pontoon the latter rests solidly upon the circular bearers in the bottom of the basin, stability being given to it by the weight of water in it. In order to turn the pontoon to the new direction required, the water is pumped out of it sufficiently to just raise it from the foundations on which it rests. It is then, while floating, turned about a central pivot, although the weight does not rest upon the pivot, but entirely upon the water. When the pontoon is revolved so that the rails upon it coincide with the rails of the railway, in the new direction, the water is admitted to the pontoon and it rests again upon the circular bearers. The vessel is then hauled off the pontoon upon the railway. These turn-tables will be utilized for passing points, or sidings, so that while the railway is virtually a single track road, vessels may meet and pass each other. By laying radial tracks from these basins, vessels can be run out, as on marine railways, for cleaning, painting and repairing. About $1,000 will thus be saved to the vessel over the cost of docking in ports.

The admissible lateral motion in the journals and on the treads of the wheels is sufficient to make a curve of twenty miles radius perfectly practicable. The curves laid down on the location of the railway are from twenty to fifty-three miles. By these curves advantage is taken of the general lines of the country and serious obstacles are avoided.

It is expected that the practicable speed will average eight or ten miles an hour, and it is intended to so construct the whole work, roadbed, rolling stock and other appliances as to make this speed perfectly safe. The whole distance is 134 miles, and it is estimated that eighteen or twenty hours is amply sufficient to transfer the vessel from one ocean to the other.

In laying out and constructing the roadbed, the possible future enlargement necessary for larger vessels, wider carriages and greater traffic will be provided for by building the foundations sufficiently wide to permit double tracking the railway. The docks at the termini can also be duplicated when