

A PNEUMATIC RAIL UNLOADER.

It is the usual practice of rolling mills to ship rails in cars having sides and end-boards which are generally permanently secured. Indeed, much rail is shipped in deep, steel cars, so that it is impossible to remove the sides or ends for convenient unloading. For the purpose of meeting these conditions, Mr. Henry Ware, roadmaster of the Buffalo, Rochester and Pittsburg Railway, has especially designed a pneumatic rail-unloader which will undoubtedly be of interest.

The cars shown in the photographs are provided with permanent sides and end-boards, the inside measurement of which is four feet five inches high. From such cars it is not an easy matter to unload and distribute the heavy sections of rail now commonly used, even if it were possible to drop them over the sides of the car by hand—a bad practice which often results in serious damage to the rails. On the sides of the car a removable galvanized frame is mounted, the uprights of which are secured directly to the sides by adjustable stake-pockets

straddling the sides of the car, and by two adjustable brace-rods. The bottom of the uprights is so formed that they rest sufficiently on the top of the car to relieve all vertical strains on the pockets. By means of a vertical wedge the pocket is adjusted to fit any width or kind of car.

The longitudinal brace-rods are connected at the top by a hand bar from which two air-hoist-cylinders are hung. A ski-frame is hung from the end of the car, the two channel-shaped skids of which frame are connected at their lower ends by a cross-beam resting in lugs riveted to the skids. Each end of this cross-beam carries a small flanged wheel, which runs upon the track-rail. The head of each ski is provided with a roller in alignment with another roller on the inner side of the upright of the gallows frame. The piston rods of the hoists are equipped with rail tongs.

In operating this device four men are required to each cylinder, making eight men to unload two rails at the same time. One man is stationed at the cylinder, one at the tongs, and one at each end of the rail. When the rail is lifted to a sufficient height, the men guide it so that it will rest on the roller attached to the inside of the upright and on the roller on the head of the inclined ski attached to the end of the car. When the air is released and the tongs detached, the men start the rail on the roller

toward the skid. The center of the rail having passed over the roller at the head of the incline, the rail tips up and slides to the ground. As the train moves on, the upper end of the rail gradually reaches the ground without any possible danger or damage. The men are not required to do any part of the lifting, that being effected entirely by pneumatic power, which is taken from the train air-brake line and is transmitted to the suspended cylinders through flexible hose.

and allowed to stand on the track until driven to a siding by regular traffic.

THE FIRST BRITISH STEAM RAILWAY TO ADOPT ELECTRICAL WORKING.

BY OUR LONDON CORRESPONDENT.

The forthcoming inauguration of the electrical working of the North-Eastern Railway is a very important event in British railway enterprise, because it is the first

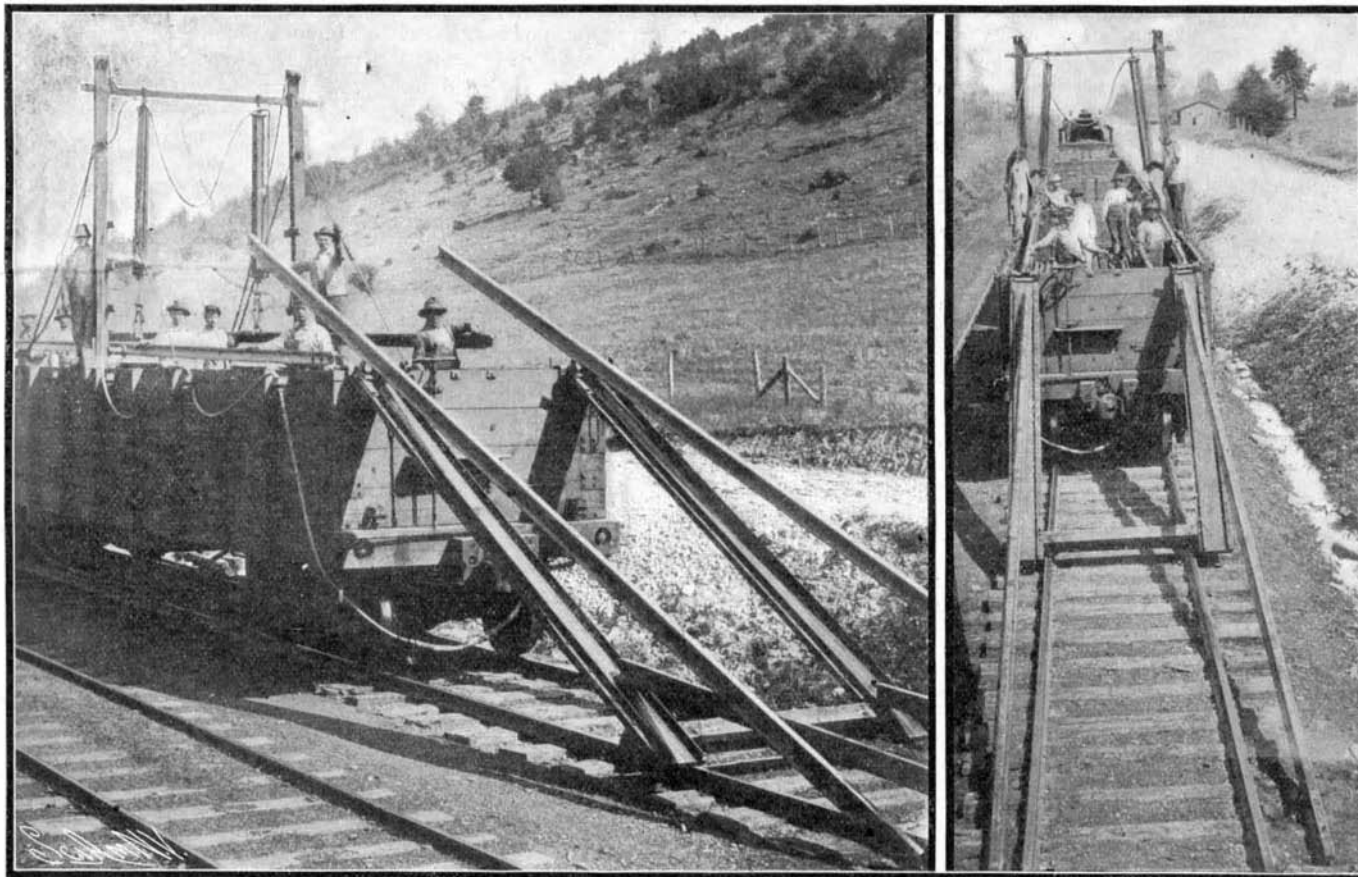
instance of one of the great railway companies replacing steam by electric traction. It is true that on the Mersey Railway electric trains have displaced the old steam-hauled trains, but this is only a very short line. The North-Eastern Railway is the first to grapple on a really large scale with the problem presented by the steady increase in working expenses and tramway competition. Another point of great interest in this scheme is the fact that Parsons steam turbines will be used exclusively in the new power house at Carville, to drive three-phase alternations, generating at 5,500 volts.

The engineering conditions to be

met present features differing essentially from those prevailing in the electrification of a London tube railway, because some 37 miles of single, double, and four-line track are involved, and there are numerous junctions, crossovers, and other special track work. There is also a very heavy goods traffic to be provided for, which, except on the Quayside branch, will continue, at any rate for the present, to be dealt with by steam locomotives.

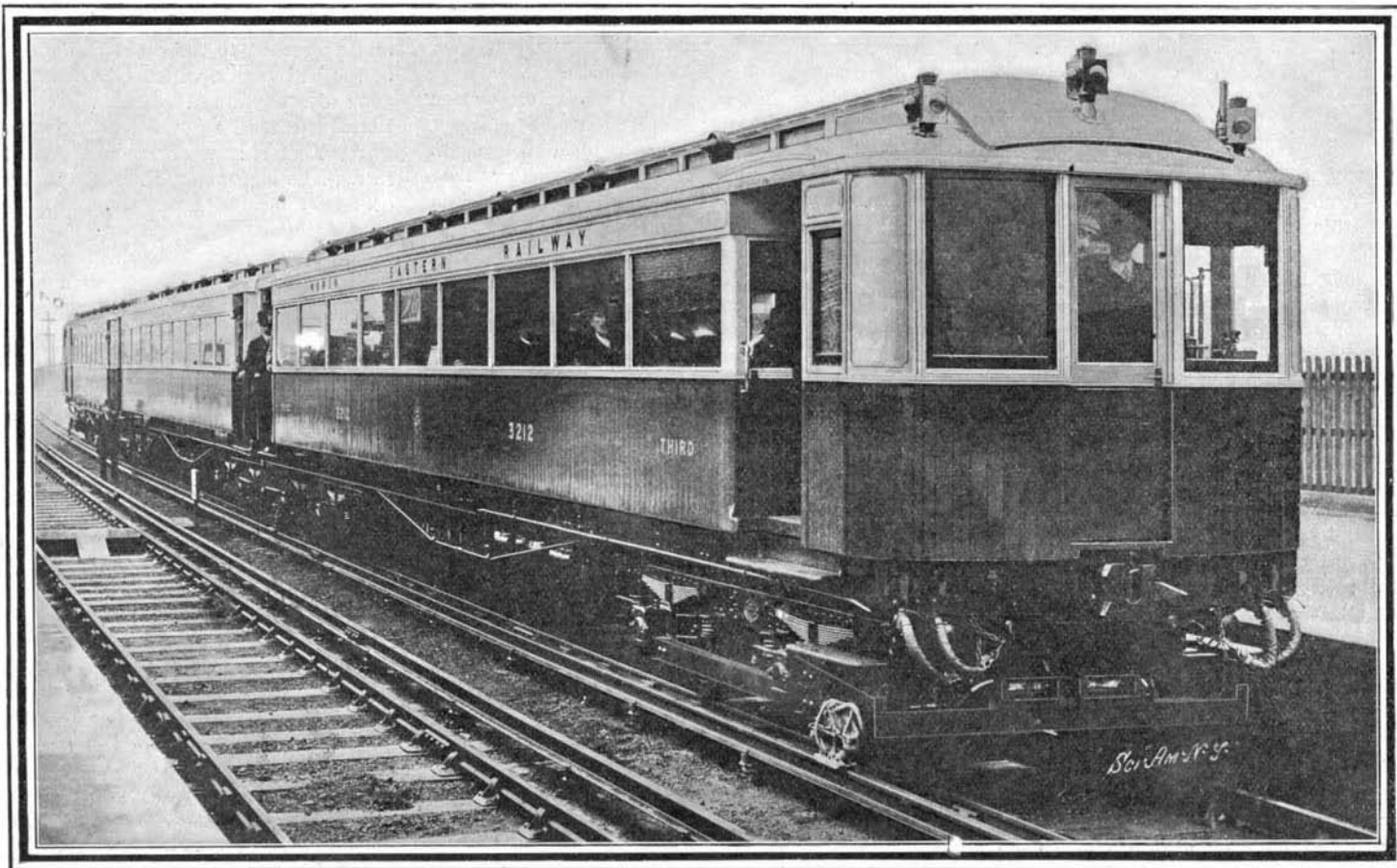
After careful examination of the advantages and cost of various systems it has been decided to operate the trains by continuous current obtained from a single collector rail placed in the six-foot way with a return circuit through the running rails. The current will be derived from rotary converters and static transformers which convert three-phase current at a pressure of 5,500 volts and periodicity of 40 into continuous

current at a pressure of 600 volts. The collector rail will be of special high-conductivity steel, Vignoles section, 80 pounds per yard, carried on insulators composed of reconstructed granite placed outside the running rail and distant 3 feet 11½ inches from the center of the track. On double track the separate collector rails belonging to each track will be normally placed between the two tracks, but at junctions, crossings, etc., or wherever there is any obstruction in the six-foot way it can be transferred to



UNLOADING RAILS FROM A CAR WITH PNEUMATIC APPARATUS.

This apparatus has been in use but a short time; still, it has fully demonstrated its practicability and usefulness. A great saving in the cost of handling the rails is effected; and the laborious work of unloading by hand is entirely avoided. With the present system of unloading rails by hand, from twenty to twenty-five men are needed to lift one rail out of the car. With this device only eight men are required to unload two rails at a time; and this is done in less than a quarter of the time ordinarily consumed in unloading one. Appliances in the form of steam and pneumatic carriages have been employed; but their use is attended with the objection that when one car is unloaded, the train is obliged to return to the siding, where a shift of cars must be made in order to bring the derrick next to the car to be unloaded. With Mr. Ware's apparatus, each car unloaded can be cut off from the train



Forty miles of this steam road are now operated on the third-rail system.

INAUGURATION OF ELECTRIC TRACTION ON THE NORTH-EASTERN RAILWAY, ENGLAND.