

is not a better judge on the continent of America, is a very high tribute indeed to the value of Mr. Reeve's services. We shall part with him with the utmost possible regret. Mr. Hays has made certain recommendations, which have been approved of by the board, for supplying the place of Mr. Reeve, & I think you will entirely endorse his action, & that of the directors, when I tell you that, as the result of his retirement, there will be promotion in the staff—no outside person will be introduced; but it has been found possible, owing to the ability & the intelligence of the gentleman who has been working under Mr. Reeve, to make promotions in the office, which will supply, & I hope, adequately supply, the loss of his services. I think there is nothing more of an interesting character with which I need trouble you now, & I will merely conclude by proposing to you the resolution.

The report & accounts & the recommendation for the payment of dividends were adopted. G. von Chauvin, Col. F. Firebrace, A. W. Smithers & Sir W. L. Young were re-elected directors. F. Whinney, London, Eng., & T. Davidson, Montreal, were re-elected auditors. On motion of Mr. Liversedge a hearty vote of thanks was passed to the directors & to the staff in Canada. Mr. Liversedge said the best tribute to their labors was the fact that the meeting had had no criticisms from the shareholders.

The Creeping of Rails.

N. W. Eayrs, Superintendent of the Eads Bridge, St. Louis, Mo., has supplied the following information as to the exact amount of rail creeping on this bridge & the means adopted to accommodate it. He says: "This movement of the rails occurs not only upon the spans, but also upon the east approach trestle; the movement on the latter is, however, considerably less now than it was before the trestle was reconstructed. The original structure was very light, & in consequence there was an unusual amount of elasticity in the floor. The creeping occurs always in the direction of the traffic; that is to say, the west-bound track runs west & the east-bound track east, & varies in amount with the variation in tonnage passing over the rails. The movement is dependent on the elasticity of the track supports; with increased stiffness in the floor system the amount of rail movement is decreased; in fact, several years ago a portion of the east approach trestle, a wooden structure about 1,000 ft. in length, was filled

& the track put on the ground. In this portion the rail movement almost entirely disappeared. As corroborating my opinion that the rail movement is caused by the elasticity of the road-bed, I may mention a section of track on the Canadian Pacific, which was laid on a soft marsh. If my memory serves me rightly as to the amount, this section of track moved 2 ft. under a single train.

"From April 15 to May 15, 1899, some measurements of the movement were made at two points, one on the centre span of Eads Bridge, & one at the west end of a 5° 43' curve on the east approach. The movements were as follows:

East-bound track.	Centre span.	East approach.
North rail.....	17 ft. 10½ ins.	25 ft. 9 ins.
South ".....	19 ft. 4½ ins.	47 ft. 7 ins.
West-bound track		
North rail.....	19 ft. 9½ ins.	33 ft. ½ in.
South ".....	12 ft. 7½ ins.	34 ft. 2½ ins.

"The rails on the east approach have a much larger run between creeping points than on the bridge, which accounts for the increased rail movement.

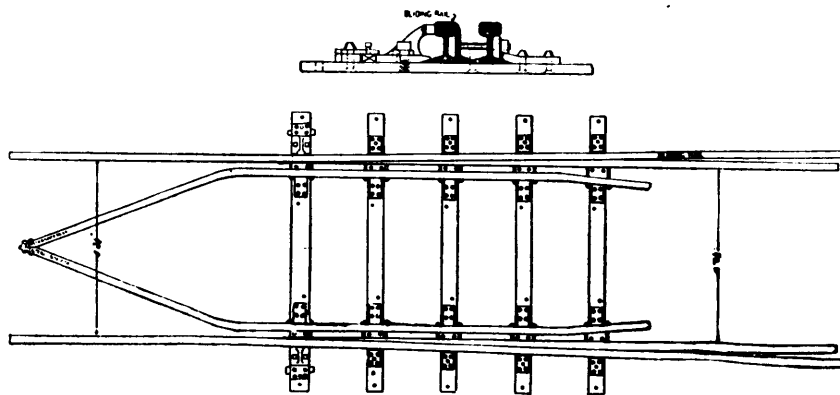
"Attempts were made at one time to check this movement, but it was found inadvisable to continue the experiment, as the strain on the fastenings was sufficient to tear fish-plates in two, or to shear off a ¾ in. track bolt. Accordingly the track was kept continuous by inserting pieces of rail of various lengths at the end where the movement commenced, and removing corresponding pieces at the other end. At either end of the bridge there are cross-overs which of course must be kept in line; at these points, therefore, the rail movement required control; there are also two points on

the east approach on each track which require protection. Accordingly there are 8 "creeping plates" as we call them, in the track.

"In order to avoid the necessity of keeping a supply of pieces of rail from 2 in. long to 30 ft. long at each place, & to dispense with the necessity of keeping a trackman to watch these places, we put in, about 15 years ago, a device which is shown on the accompanying drawing. This device consists of a pair of switchpoints, rigidly held to gauge by forming part of an iron frame which is bolted to the ties. The main rails of the track which is ahead of the device—that is, in the direction of the traffic—extend outside of the switch points. A full rail is coupled on to the main rail, which, in case of a trailing point, drags the rail through the jaws, or, in the case of facing points, shoves it through the jaws. In the former case, when the rail has nearly passed through, a new rail is coupled on, & in the latter case the rail is uncoupled as soon as it has passed through the creeper (or the 'Irishman,' as the trackmen call it, as it takes the place of the Irishman formerly employed). The rail which has been shoved through the creeping plate & has been taken off, is carried across to the opposite track to be used to feed into the creeping plate & begins to travel back again.

"The force impelling the rail is so strong that it will drive a straight 70 lbs. steel rail through a 5° 43' curve, curving the rail during the passage & straightening it again after the rail comes through.

"The movement on the spans can probably never be entirely overcome, as the deforma-



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