

dent of Motive Power, Pennsylvania Railroad Company; E. D. Nelson, Engineer of Tests, Pennsylvania Railroad Company; A. S. Vogt, Mechanical Engineer, Pennsylvania Railroad Company; G. L. Wall, Director of Tests, Pennsylvania Railroad System; Willard A. Smith, Chief of Department of Transportation Exhibits; W. F. M. Goss, Dean of Schools of Engineering, Purdue University, LaFayette, Ind.; Edwin M. Herr, General Manager, Westinghouse Air-Brake Company; J. E. Sague, Mechanical Engineer, American Locomotive Company; F. H. Clark, Superintendent of Motive Power, C. B. & Q.; C. H. Quereau, Superintendent of Shops, New York Central; F. M. Whyte, General Mechanical Engineer, Vanderbilt Lines; H. H. Vaughan, Superintendent of Motive Power, Canadian Pacific; H. V. Wille, Engineer of Tests, Baldwin Locomotive Works; John A. F. Aspinall, General Manager, Lancashire & Yorkshire, England; Karl Steinbliss, Director, Royal Prussian Railways, Altona, Germany; Chas. M. Jacobs, Chief Engineer, North River Division, Pennsylvania, New York & Long Island Railroad Company; McKim, Mead & White, architects, New York terminal station; Klee Brothers, makers of model of New York terminal station; Victor Mindeleff, maker of models of West Philadelphia terminal and New York and Long Island tunnels.

and oppositely causes them to firmly clamp the base and web of the rail, final movement and adjustment being provided for by slotted bolt holes. When the joint members are thus forcibly moved to the limit of their travel, by the blows of a sledge for instance, the effect is to encase the rail ends in a box-like structure and hold them rigidly against vertical or lateral movement. The joint may be tightened at any time with a few blows of a hammer. The patentees are Messrs. Y. and J. G. Ardandez and C. L. Voorhies, of New Iberia, La.

**Forty Years in Transportation.**

It is impossible to overestimate the results accomplished by American railroads in reducing transportation costs to shippers in the last 20 years, especially in the charges

The result on the Pennsylvania Railroad, which has been foremost in the work of perfecting its line and equipment and in expending money in order that the costs of operation might be reduced, has been such as to make a summary of what has been done during the last 40 years an interesting record of railroad history. The tables give the tons of freight carried one mile, the average rate per ton per mile and the freight earnings at different periods since 1864.

These figures do not show the lowest point reached for the average rate per ton per mile which was in 1899. It will be seen that the rate since 1864 has fallen from 2.498 cents to .585 cent in 1894 and .605 cent in 1903. If the Pennsylvania Railroad, which has still the legal right to charge 3 cents per ton per mile in this State, had main-

	1874.	1864.	Inc. or dec.
Tons of freight carried 1 mile.....	1,916,591,690	436,591,940	Inc. 1,479,989,750
Average rate per ton per mile, cts.....	1.290	2.498	Dec. 1.208
Freight earnings.....	\$24,715,418	\$10,907,036	Inc. \$13,808,382
	1884.	1874.	
Tons of freight carried 1 mile.....	4,134,657,237	1,916,591,690	Inc. 2,218,065,547
Average rate per ton per mile, cts.....	0.804	1.290	Dec. 0.486
Freight earnings.....	\$33,242,301	\$24,715,418	Inc. \$8,526,883
	1894.	1884.	
Tons of freight carried 1 mile.....	6,902,828,482	4,134,657,237	Inc. 2,768,171,545
Average rate per ton per mile, cts.....	0.585	0.804	Dec. 0.219
Freight earnings.....	\$40,412,551	\$33,242,301	Inc. \$7,170,250
	1903.	1894.	
Tons of freight carried 1 mile.....	14,846,639,121	6,902,828,482	Inc. 7,943,810,639
Average rate per ton per mile, cts.....	0.605	0.585	Inc. 0.020
Freight earnings.....	\$89,895,722	\$40,412,551	Inc. \$49,483,171

**All-Electric Interlocking.**

The General Railway Signal Company, Buffalo, N. Y., reports the receipt during the past 60 days of orders for all-electric interlocking plants at 20 places aggregating 1,212 levers or spaces. The names of the places

for carrying freight. During that period no other country has had the advantage of such low rates as have been made by American lines.

The London *Statist* recently remarked that

tained the rate in force in 1864, as the English roads have, the earnings from freight alone in 1904 would have been more than \$370,000,000 and would have been sufficient to have provided for a dividend in that year of 100 per cent. on the present outstanding stock issue and to have provided handsomely for extraordinary expenditures. The earnings from freight during this period have increased from \$10,907,036 to \$89,895,722 and the rate per ton per mile has fallen nearly 2 cents. The progressive movement between these two extremes is shown in the tables in a very striking way for each period. The difference between the freight business of the road now and 40 years ago is further made apparent in the following table:

	Road.	Machine spaces.
Pana, Ill.	Cleveland, Cincinnati, Chicago & St. Louis...	112
Lawrenceburg Junction, Ind.	Cleveland, Cincinnati, Chicago & St. Louis...	28
Broad Street, Columbus, Ohio.	Toledo & Ohio Central	72
Wilders, Ind.	Erie	32
Fourth Street, Saginaw, Mich.	Pere Marquette	64
Washington Avenue, Saginaw, Mich.	Pere Marquette	44
Kedzie Avenue, Chicago, Ill.	Chicago & Northwestern	104
Ashtabula, O.	Lake Shore & Michigan Southern	112
Morton Grove, Ill.	Chicago, Milwaukee & St. Paul	40
Ashmore, Ill.	Cleveland, Cincinnati, Chicago & St. Louis...	12
Atlanta Terminal, Ga.	Atlanta Terminal Co.	184
West Columbus, Ohio.	Baltimore & Ohio	56
Eldorado, Kan.	Atchison, Topeka & Santa Fe	24
Bellaire, Ohio	Baltimore & Ohio	28
Erie, Pa.	Lake Shore & Michigan Southern	64
East Toledo, Ohio	Lake Shore & Michigan Southern	100
Hinton, W. Va.	Chesapeake & Ohio	12
Harriman Junction, Tenn.	Cincinnati, New Orleans & Texas Pacific	20
Champaign, Ill.	Illinois Central	32
Centerville, Ill.	St. Louis Merchants' Bridge	72
Total		1,212

	Tons freight carried 1 mile.	Av. rate per ton per mile, cts.	Freight earnings.
1903.....	14,846,639,121	0.605	\$89,895,722
1864.....	436,591,940	2.498	10,907,036
Change.....	14,410,047,181	1.893†	\$78,988,686

†Decrease; all others increase.

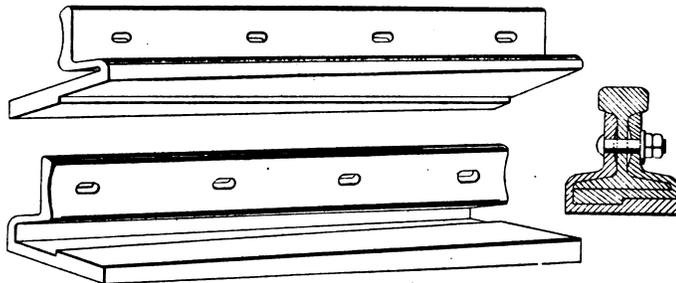
are shown in the accompanying double-column table.

In England "the average rate per ton per mile has never shown any reduction worth speaking of since railroads were introduced, and in spite of the growing density of traffic in England the cost of operation, both actually and relatively to the traffic, rose steadily until an effort to stop the advance began to be made in 1900." In this country not

The freight traffic on the Pennsylvania has increased more than 3,300 per cent., and the earnings from freight have increased more than 724 per cent., while the freight rate has fallen 75 per cent. In other words, the freight rate in 1903 is less than one quarter of that charged in 1864.—*Wall Street Journal*.

**A New Rail Joint.**

A new design of rail joint which has recently been patented is shown in the accompanying drawing reproduced from the patent papers. The joint is formed of two parts,



**A New Rail Joint.**

the novel feature being the base. The bottom of each member of the joint is thicker at one end than at the other, the tapers of the two being respectively in opposite directions. The halves also interlock on the bottom. Movement of the plates longitudinally

only have freight rates been reduced sharply but the railroads, chiefly by a large expenditure of money, have been able to so reduce the cost of operation as to make a profit on the low rates which have been established.

**A Bas the Red Petticoat.**

[Not from the *Ladies' Home Journal*.]

The red petticoat has been relegated to its own proper and unobtrusive function, we are happy to report; and modest maidens who flag trains now use red tablecloths. This is the latest fashion, as reported from Paris (Kentucky). Whether or not red tablecloths would be tolerated in the stuffy and excited dining rooms of the Waldorf we do not know—nor do we care; but they are a deuced handy thing to have in farm houses near high wooden trestles. In the free air of the South the "simple life" still counts a few faithful devotees and the laundry is not vexed with table cloths three times a day. Simplicity conduces to heroism, as witness the following report:

"Paris, Ky., Nov. 30, 1904.—Passengers on the Chesapeake & Ohio westbound flyer for Louisville were saved possibly from death last night by the heroism of Miss Lena Allen, 16 years old, who lives near Ewing-