

RAILWAY NOTES.

At a recent convention of railway men in Boston a prominent speaker expressed great satisfaction in view of the improvements adopted lately by railway managers to increase the comfort and safety of trainmen and passengers; yet much more, he said, remained to be done. Among the improvements and economies of the near future there were named: An improved freight car coupling; a suitable power brake for freight trains; the Miltimore safety axle, with independent wheels; the rail system of electric block signals; gas for lighting and heating passenger cars, without danger from fire in case of accident; shelter and protection for freight train men when on the road; and suitable resting and reading rooms for their comfort and improvement when waiting for delayed trains.

At the late meeting of the Master Car Builders' Association in this city, the safety of trainmen—or rather the urgent need of devices for enhancing their safety—was discussed at considerable length. The President, Mr. Leander Garey, spoke of the effect of interchanging cars, whereby the cars of each road are scattered all over the country, and the resulting need of much more careful inspection of freight cars. Inspectors look to their running gear, draw attachments, and brakes, but seldom or never to dangerous ladders, loose brake wheels, broken running boards, or other things upon which merely the lives of brakemen depended.

Letters were read from a number of master car builders, yardmasters, and others, in which the deficiencies of the average freight car were severely criticised. Among the improvements needed to lessen the risks of trainmen, a master car builder mentioned better steps for climbing the cars. Such steps should be at the ends of freight cars, and the one at the sill should be stopped, so that a man's foot cannot slip off. There should be a strong step secured to the side of the sill, with a firm hand-hold at a proper height above it. Then the steps should be made reliable. Too often they are fastened on simply with screws that have been hammered in to their heads, and consequently give way when a strain is put on them precisely at the moment when a man's life depends upon their solidity.

A yardmaster mentioned as causes of accidents to train hands, first, the different heights of the draw bars; second, the insufficiency of follower heads and springs, which should be strong enough to stand a reasonable concussion without giving way; third, to the different kinds of draw bars employed. He strongly urged the adoption of a uniform style of draw bar, and recommended the Safford as best for saving fingers and hands, particularly when accompanied by the Griffiths attachment, he approved of it. Brake staffs, he thought, should be uniformly on one side, not, as now, sometimes on one and sometimes on the other, so that oftentimes brakemen are injured for life, or even killed, by being caught between them.

Another yardmaster expressed the opinion that the general adoption of the Safford bar and its use at a uniform height from the track would render mutilations and deaths in the work of coupling at least infrequent—would, in fact, do away with 90 per cent of the present proportion of injuries.

The need of wider running boards on the tops of cars was also insisted on; as also were guarded brake wheels, and frequent reliefs of trainmen in bad weather.

The superior strength of American cars has been frequently shown in cases of derailment. Where foreign cars would have been knocked into kindling wood the American have withstood the shock wonderfully, to the relatively great protection of the passengers. An unusual and unusually severe test of their strength is reported in the *Journal of the Franklin Institute*:

When the Pennsylvania Railroad depot was demolished by a tornado last fall, a heavy car shed was blown over upon several trains of cars, which were under it, ready to be dispatched. So great was the strength of these cars that they held up the wreck. The 10 inch cast iron columns, 25 feet long, that supported the roof girders, fell in many cases directly against the cars with the force due to their own weight and that of the whole roof, probably at least six tons to each column, impelled by the force of the wind added to that of gravity. Notwithstanding this, not one of the cars was wrecked. In one instance a column struck a car near the middle and snapped off, but the framework of the car was not broken; the lower part of the column rested against the car, the upper part on its roof. A car that will stand, without injury, the impact of a 10 inch cast iron column, with six tons of extra weight, driven by a gale of 75 miles an hour, contains an excess of strength that is very assuring to the traveler.

In Russia the machinery of factories and the engines of railroads and steamers are chiefly in charge of foreigners, on account of the lack of experienced native mechanics. It is now realized that this state of things is neither economical nor patriotic; and besides there have been accidents because the foreign mechanics and engineers did not understand the Russian language. In order to bring about a change the government, in 1871, ordered the railroad companies to pay 15 rubles per verst (two thirds of a mile) for the establishment and support of railroad schools. About 320,000 rubles a year are collected under this order, and now there are about twenty such schools. Twenty more are to be opened this year. These schools are situated on the railroad lines, and each of them is provided with a machine shop, where every pupil is obliged to work not less than three hours daily. The full course requires four years. Each student chooses his

specialty as mechanic, engineer, or telegraphist. Besides these there are five conductors' schools. As the railroad schools have proved successful, other branches of industry are to follow the example. Many steamship companies and factories propose to establish schools to secure experienced hands for their service.

GREAT advantages are claimed for the Prosser "twin cylinder" cars for the transportation of grain. They are said to be cheaper, lighter, more durable, occupy less space, easier draught, will not laminate the track, may be run at a greater speed, lower the center of gravity, reduce the windage of train, remove the weight of load from axle, require less oil, less attention, less parts, can dry wet grain in the car, and prevent it from heating, souring, or moulding while in transportation.

More specifically the elements of superiority of the new car are shown by the following figures:

ORDINARY FREIGHT CAR.

Weight of car.....	10 tons.
Weight of load.....	10 tons.
Weight of car and load.....	20 tons.
Amount drawn by engine.....	600 tons.
Weight of cars.....	800 tons.
Weight of load.....	800 tons.
300 tons.....	800,000 lb.
600,000 lb.....	10,000 bu.
10,000 bu. at 15c.....	\$1,500
Cost of transit.....	1,000
Profit.....	500

PROSSER CAR.

Weight of car.....	3 tons.
Weight of load.....	10 tons.
Weight of car and load.....	13 tons.
Amount drawn by engine.....	1,200 tons.
Weight of cars.....	280 tons.
Weight of load.....	280 tons.
980 tons.....	1,840,000 lb.
1,840,000 lb.....	30,666 bu.
30,666 bu. at 15c.....	\$4,599.90
Cost of transit.....	1,000
Profit.....	3,599.90

THE unpleasant noise of escaping steam from safety valves, open steam pipes, vacuum brakes, and the like, is said to be entirely suppressed by discharging the steam through a small chamber filled with glass or metal beads. The beads—from one quarter to five sixteenths inch in diameter—are held in place by copper gratings, and the steam is entirely silenced by its passage through the tortuous interstices between them. At the same time it escapes freely, with little or no back pressure. The device has been patented.

A BERLIN paper says, in regard to one of the steps recently taken toward concentrating the railroads under the government, that it is to be feared that when the private roads have ceased to exist, the State, as the sole possessor of the whole railroad traffic, will dictate much higher rates than are now had; and the fact that this can be done only through the law, and with the consent of the representatives of the nation, will afford in appearance only a protection against such an excessive increase of charges. For the administration will need, to justify the increase, only to show that the lower rates do not cover the working expenses and the interest on the cost of the roads; and as it at present works at greater expense than private enterprise, it will probably be easy to show that justification.

THE Grand Duke Nicholas of Russia has issued a pamphlet urging the speedy construction of an Orenburg-Tashkend Railway. His argument for this route, based on that of De Lesseps and Cotard, is, in brief, as follows: If a grand circle be drawn of the globe between London and Calcutta, the segment of it intersected between the two cities goes through Amsterdam, then a little south of Berlin, then through Varsow, through Southern Russia to the Caspian Sea, which it cuts somewhat above 44° of latitude; then through the Sea of Aral, proceeds to the east of Samarkand, cuts the Indus about a hundred miles south of its great angle, and goes down the valley of the Ganges to Calcutta. Russia is in possession of the Asiatic part of that shortest route to India. She ought consequently to construct at once the line of railway which most closely follows it—to wit, from Orenburg to Tashkend.

THE construction of a line of railway from the port of San Jose de Guatemala to the town of Escuintla, the center of the chief coffee district, has been begun. The distance is 28 miles, and it is intended to build the road hereafter to the city of Guatemala, 32 miles beyond Escuintla. The government guarantees a certain profit on \$1,000,000 capital, and loans the company \$210,000. The project includes a final extension from Guatemala 140 miles eastward to the port of San Tomaso on the Atlantic coast. Part of the material has been shipped from San Francisco, with a large number of Chinese laborers.

THE lowest cost of carrying freight yet reported is found in the report of the Northern Central Railway for 1878, which gives the cost per ton per mile on the Susquehanna Division (47 miles long) as 0.35 cent per ton per mile. On the whole road, however, the average cost is about twice as much, and on one of its branches, 9 miles long, the cost is nearly ten times as much—3.246 cents per ton per mile. It is not often the companies report separately the cost on different sections of the same road. If they did, perhaps some of them would show a lower cost than this.

THE report of the New York State Engineer and Surveyor of Railroads for 1878 shows that the total paid up capital invested in the steam railroads reporting in the State is \$392,164,764.25, and the proportion for New York, pro-rating the roads lying in the State and in adjoining States, is \$287,826,957.05. This is an increase in the total aggregate of \$7,255,616.49. The paid up capital of the horse roads amounts to

\$23,167,130.36—a decrease of \$73,357.63. This decrease was caused by roads reducing stock.

The total number of miles of road built (main line and branches), including leased lines out of the State, is 8,390.73, of which 5,752.24 are in this State. The double track, including sidings, amounts to 4,358.33 miles. There have been 107.79 miles of steam, and 8.24 miles of horse railroads built during the year. The total miles of road owned by horse railroad companies are 426.03, and the double track and sidings are 278.19 miles.

The steam railroads doing business in this State own 2,801 engines, 1,993 first-class passenger cars, 358 second-class passenger and emigrant cars, 741 mail, baggage and express cars, and 59,413 freight cars. Of the 278 steam roads now in existence in this State, 47 companies operate their own and other roads, 5 are operated by receivers, and 1 is leased and operated by a private person. There are also 7 corporations formed under the laws of other States leasing and operating roads in this State—a total of 60.

Sixty-one horse railroad companies operate their own and other roads. Two steam roads, the New York and Harlem, and the Utica, Clinton and Binghamton, operate part of their roads as horse roads, and 2 are leased and operated by private persons—a total of 65.

There are also 2 steam roads owned and operated by private parties.

There are 71 steam and 4 horse roads leased and operated by other roads, and 1 road owned by private persons is operated by a steam railroad company; 72 steam and 15 horse railroads are not in operation.

The number of passengers carried by the steam roads was 48,769,084, an increase of 8,756,863, classifying the roads last year to correspond with the present report, and an average of 20.84 miles was traveled by each passenger. The horse roads carried 244,290,364 passengers during the year, an increase of 5,748,628. The number of tons of freight carried by the steam roads was 38,320,573, an increase of 3,335,792.

THE one thing wanting to make a direct railroad communication between India and Europe is a railway from Alexandria, the nearest point on the Persian Gulf, to Kurrachee. A committee has been formed in London, consisting of the Duke of Sutherland and several other noblemen and gentlemen, to acquire certain routes through the valley of the Euphrates to complete the connection. This done, it will be possible to go from London to Kurrachee in about seven days—a distance which it now takes nineteen days to cover.

THE Belgian Government has decided on the abandonment of wooden railway sleepers. Its example will doubtless find imitators, if indeed the example be not improved upon, and steel be used eventually instead of iron. It should be noted that it is not the longirine, or longitudinal sleeper, that has been adopted, but a German system of cross sleepers.

THE greatest railroads in India are composed of the Punjab and Delhi system, some 1,200 miles in length, meeting at Delhi the East Indian Railway, which goes to Calcutta, and which is about 1,000 miles in length, with a branch at Allahabad to Jubbelpore, some 250 miles additional in length. More, it connects with the great Indian Peninsular system which is carried on to Bombay, some 550 miles. This system runs through a chain of mountains, called the Thull and Vhrne Ghatz, where the engineering difficulties have been immense, and 15 miles of tunnel made. The line then runs from Poonah to Magpore, where it is connected with the Madras Railway, some 850 miles in length. This line also serves Bangalore, the garden of the Madras Presidency, and the coolest spot in the plains of India. In the same direction is the Hyderabad State Line, belonging to the Nizam. The Bombay and Baroda Railway runs to Giucwarah, thence through Central India to Ahmedabad, where it is connected with the Rajpootan State Railway, running to Delhi. At Calcutta is the Eastern Bengal Railway, which goes to Barrachpore, thence to Kooshteah, from which a line of steamers connects with Assam, the great tea growing country of India. In Oude is the Oude and Rohlkund line, which runs 500 miles through some of the richest plains of that fertile region. The noble bridge, about 1 1/4 mile in length, which spans the Ganges at Cawnpore, belongs to this company. These comprise the general grand trunk system of railways in India.

THE *Railway Age* has given a list of forty-eight railroads that were sold under foreclosure during the year 1878, representing a total mileage of 3,902 miles, \$180,014,500 of bonds and debt, and \$151,616,700 capital stock—the entire amount of bonds, debt, and stock being \$331,631,200.

A summary of foreclosure sales during the last three years stands as below; the moral is evident:

Year.	No. of Roads.	Mileage.	Capital Invested.
1874.....	30	3,846	\$217,848,000
1877.....	54	3,575	198,984,000
1878.....	48	3,902	311,631,000
Three years.....	132	16,623	\$ 28,463,000

A SINGLE locomotive on the Kansas Pacific recently hauled a train of 58 empty and 15 loaded cars, with caboose attached, from Ellis to Brookville, a distance of 102 miles, in 9 hours and 30 minutes. The monster locomotive "Uncle Dick" described in a late number of this paper, has already achieved distinction by climbing the steepest grade of the mountain division of the Atchison, Topeka, and Santa Fe Railroad, drawing 22 loaded cars.