

mittee will submit it to the executive committee of the A. R. A., which will submit the plans to vote of the association.

Between February 1 and May 15, 209 employes of the Boston & Maine R. R. left the company's service to go into government service. This number does not include those who have joined the two companies being formed along the line of the Boston & Maine for railway service in France. Of the 209 men now in the army, navy or national guard, 82 are from the transportation department, 3 signal, 32 maintenance of way, 81 mechanical, 9 stores, 2 dining-car department.

Philadelphia & Reading Ry. as of May 26, 1917, reported 162 men who were in the company's employ and who have

volunteered for service in the army and navy. All departments of the railway are represented. Forty of these men are now in the navy, 114 in the army and eight men are in the national guards of Pennsylvania and New Jersey.

The American Railway Association's latest bulletin on car shortage statistics shows that the net shortage on May 1, 1917, was 145,449 cars. This was an increase of 652 cars over the shortage on April 1, and the largest reported since the present shortage began last September.

The executive committees of the Master Car Builders' and Master Mechanics' associations meet in Chicago, June 14, for consideration of subjects, committees, etc., for the coming year.

All-Steel Passenger Car Equipment for the Erie Railroad

This article describes a design of steam railway passenger car involving the trussed side frame construction devised by L. B. Stillwell, consulting engineer, New York, and previously used in suburban coaches for the Erie Railroad. Appreciable savings in weight as compared with the wooden cars which they replace, have been effected.

The Erie Railroad has recently received from the Pressed Steel Car Co., six coaches and one baggage car of all-steel construction, which have been assigned to through passenger service. The construction embodies the principles of design adopted for the all-steel suburban coaches purchased some time ago and is of the truss side frame type developed by L. B. Stillwell, consulting engineer. These cars, however, are the first employing this construction in through line service. In the development of this type of car for passenger service, the following are the chief elements which have been considered: Safety of passengers; comfort of passengers; low cost of operation; low cost of maintenance; and moderate first cost.

An important safety feature of the structure of the new car bodies is the Stillwell anti-telescoping bulkhead construction at the bar body ends. This includes a heavy steel anti-telescoping plate tying the side walls together at the height of the ceiling of the lavatory and saloon and extending about five feet lengthwise of the car, combined with body and door posts of special design in the form of plate columns, each 21 inches wide and having a section of 13 square inches, about equivalent to two 15-inch I-beams. These heavy door posts are securely framed into the anti-telescoping plate above the door and to the underframe members below the floor. This rigid end construction, together with the high girder side frame provide what is believed to be a more effective defense against telescoping than has ever before been incorporated in any passenger car. The entire structure of the car body now assumes the equivalent of a solid box construction which will resist collapse or telescoping even in the event of a car being derailed or overturned.

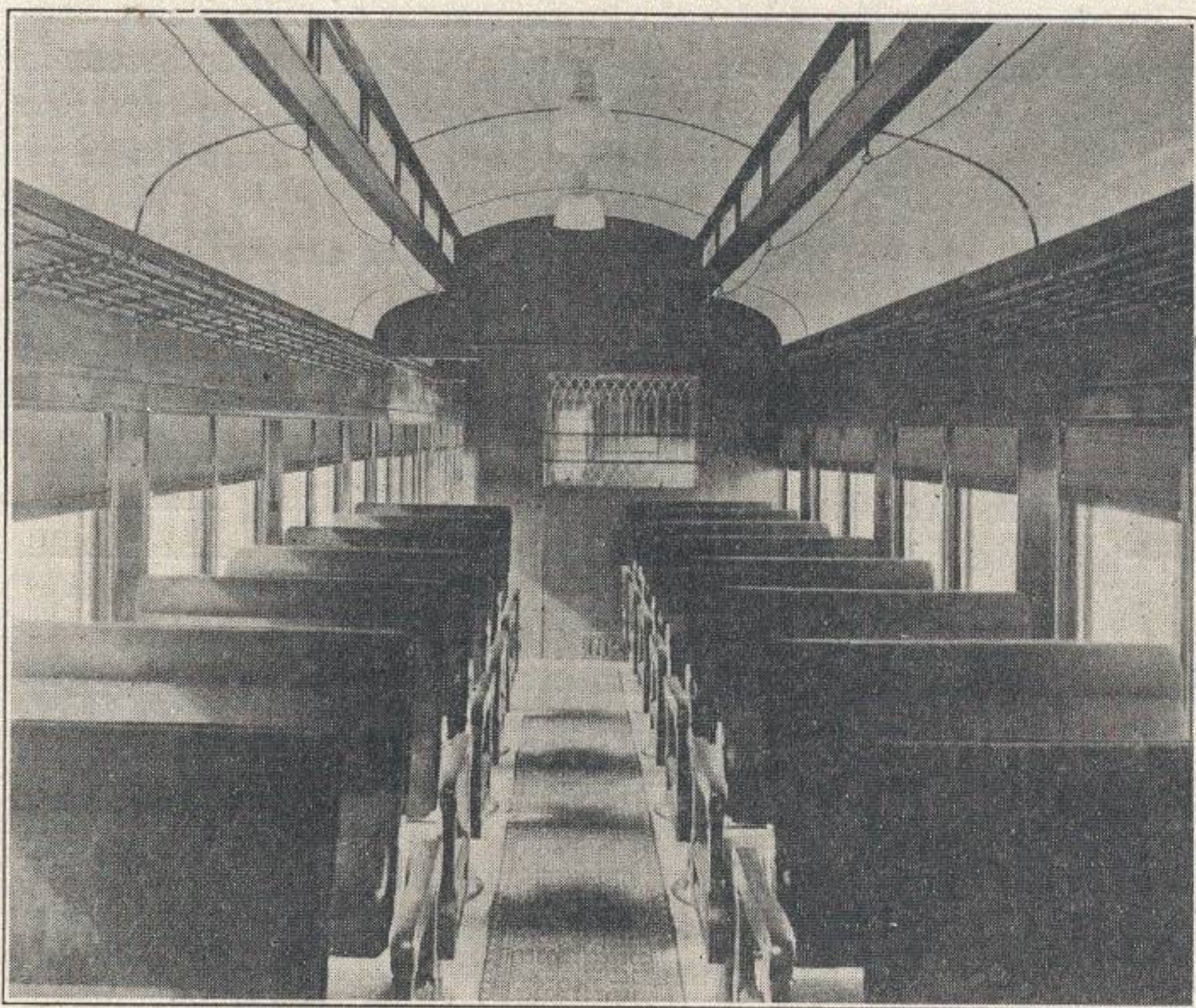
The vestibules are wide and roomy and the platform is reached by three steps of latticed sheet steel with safety facings, thus affording a secure footing and preventing the accumulation of ice or snow.

The general contour of the cars is similar to those having a wooden super-structure and now used in through service, so that in the make-up of a train there will be no perceptible difference in the appearance of these cars as compared with others in the same train of different construction. The clere-story is of the usual type with ventilator sash ordinarily employed except that solid panels have been substituted for the glass heretofore used. The floor is covered with red Flexolith which is fireproof and which, for purposes of comparison, may be said to resemble concrete. The interior finish is known of fire resisting Agasote.

The sides and partitions in the cars are finished to resemble mahogany, while the ceiling and lower deck are finished with a light grey enamel which is designed to afford maximum reflecting properties with minimum glare from the lamps. Along the side below the clere-story are basket racks continuous between the saloon and smoking room partitions.

The cars are insulated against interchange of temperature throughout with Flaxinum, a fibrous insulation $\frac{3}{4}$ -inch thick applied to the entire exposed surfaces, including the floor, except at the required window and ventilator openings. At one side and each end of the cars there is a toilet and on the opposite side a lavatory, one being for the use of men and one for women. In the lavatory, there is a wash bowl with cold water, drinking fountain and a mirror.

The feature of the interior design which departs from the ordinary is in the provision that has been made for the con-



Interior, New Steel Passenger Coach, Erie R. R.

venience of passengers who smoke, since a special compartment has been placed in the center of the car which will accommodate 12 passengers with comfort. Entrance to this compartment is through a passageway at the side of the car, so that, in effect, this compartment divides the car into two sections, in each of which there are 16 double seats accommodating 32 passengers, from which it will be seen that the entire seating capacity of the car is 76. The 12 passengers in the smoking compartment are accommodated in two rows of four

stationary seats, one row of two stationary seats, and two portable wicker chairs.

The cars are lighted by means of ten 25-watt tungsten lamps having Holophane shades, one light in each of the lavatories and toilets and two in each of the vestibules over the steps; the current being obtained from storage batteries having a rated capacity of 800 ampere-hours at 32 volts.

The weights of these cars are particularly interesting as they compare very favorably with the weights of the steel under-frame wooden cars of similar size in use on the Erie. The new all-steel car on 4-wheel trucks fitted with clasp brakes weighs about 111,000 pounds, exclusive of lighting equipment, whereas the wooden cars on 6-wheel trucks now in similar service weigh about 117,000 pounds. The difference in weights of trucks is more than compensated for by the weights due to increased length of vestibules and of the specialties applied to the new steel car and trucks which were not included in the wooden car.

The cars employ the Stillwell built-up truck construction. The 4-wheel instead of the more commonly employed 6-wheel design was effected through the limit which it was possible to place upon the weight of the super-structure while, in the truck design, special attention was given the riding properties so that the cars actually ride more easily than do heavier cars with 6-wheel trucks. Another feature which contributes to the comfort of the passengers is the clasp brake construction which is now commonly employed in passenger service, and which eliminates the unpleasant reactions frequently observed when cars using the single brake shoe application was brought to a stop.

The fact that these new all-steel cars are of lighter weight than the usual all-steel construction has resulted in triple economy, first in reduced first cost, due to elimination of unnecessary weight of steel, second as no increase in train weights is caused by the substitution of the new steel cars for the former wooden equipment no change of motive power is necessitated, and third, the reduced weight of car leads to a saving in fuel per train mile.

The baggage car employs the same system of side frame construction and has the anti-telescoping features mentioned in connection with the description of the coaches. These cars also have the same design of four-wheel truck with clasp brake as was used under the coaches.

The chief general dimensions of these cars are as follows:

	Coach	Baggage Car
Length over coupler faces.....	79 ft. 7 ins.	73 ft. 8 ins.
Length over end sills.....	78 ft. 0 ins.	72 ft. 1 in.
Distance center to center of trucks.....	54 ft. 0 ins.	53 ft. 0 ins.
Length over side sills.....	9 ft. 9½ ins.
Width inside of car.....	8 ft. 11⅛ ins.

A Proposition for Government Relief of the Freight Car Situation.

Quite recently in congress, Senator Hoke Smith of Georgia, asked why if our government can assume responsibility for re-organizing and rebuilding Russian railways, it should not give some attention to improvement of railways in the United States through government loans which would insure the public necessary transportation. This episode suggested the following letter which Newman Erb, president of the Ann Arbor Railroad, has addressed to Senator Smith:

"Referring to the bill recently introduced by you for the purpose of affording much needed relief of the critical freight car situation, I desire to present to you some facts which may serve to hasten action in the matter. The public is vitally concerned that the facilities of our railroads for service—prompt and efficient service—shall be adequate, that terminals, distributing points, assembling yards and equipment, shall keep pace with expansion, and the added demands which every year has

brought in the past and which every year hereafter is sure to bring; that they be able to measurably anticipate what may be reasonable to expect of them next year and the following year. Unfortunately this has become impossible of accomplishment by a large majority in number and mileage of our railroads, with inadequate net earnings, unsatisfactory because of the unreasonable return to their shareholders and the impairment of their credit to the vanishing point.

"We were short 143,000 freight cars on April 1 last. This is the so-called 'between season' period. When crops begin to move, taken with our present industrial activity and the added burden upon our transportation system through war conditions, what is the shortage likely to be then? The situation is critical now; it is sure to become more so, and I hope I may arouse your interest and the interest of congress in obtaining the cooperation of the government to avoid the embarrassments, hardships and suffering certain to result, unless the emergency upon us is promptly dealt with. Full relief this year will be impossible, but partial relief may be given by very prompt action. The railroad companies have not the financial credit, and have not had it for a long time, to raise the necessary large sums of money to meet this pressing demand.

"Our railroads have not kept pace with their normal equipment requirements. Since 1899, 73,636 locomotives were built for our railroads, yet only 63,850 locomotives were in service in 1915, with an actual decline in the year 1916. Of freight cars, 2,535,911 were built, and yet only 2,283,830 were in service at the end of 1916. Notwithstanding that 209,113 freight cars were built in 1915 and 1916, we had less cars in service in 1916 than in 1914. The large fortunes invested in locomotives and freight cars which were in existence 17 and 18 years ago have entirely disappeared.

"For 1916, 829 railroads, independently operated, reported to the Interstate Commerce Commission, representing 254,179 miles. Of these, 697 or 82 per cent of the total in number operated 136,350 miles, whose earnings were less than \$10,000 per mile. These are the great arteries of commerce that act as feeders and distributors for the great trunk lines. They naturally come into closer and more intimate relations with the people in the territory which they respectively serve than their more important connections; and it is upon their development that the South, Southwest and the Northwest, are now depending and must for some considerable time still depend for their commercial and industrial growth. Yet, this group of railroads with 136,350 miles of operated mileage earned less than \$10,000 per mile last year, considered the most prosperous in their history; paid dividends averaging 3.68 per cent of their capital, over half of which, or \$52,747,552 out of a total of \$101,497,122, was appropriated out of surplus. This indicates the desperate efforts made to sustain their declining credit. They cannot be relied upon because they have not the means to supply the much needed equipment; and in the pressing emergency I believe all must agree that it is as vital to the country that our railroads shall be in a condition to perform the services which are now most essential if our war requirements at home and abroad are to be met and that they should be assisted, as it is for us to furnish assistance in the reconstruction of the railroads of our allies.

"The freight car equipment of the country has very properly been placed under a unified central control, but a large number of additional freight cars should be promptly added. This can be obtained only through government agencies. The car companies of the country have for several years, and are now, utilizing only a little more than 25 per cent of their normal capacity; but on account of the difficulty of obtaining the materials, it is impossible even if credit were available, to secure the material for the new cars in time for this year's service without recourse to the power of the government to obtain preferential deliveries.

"No greater service can be performed to the country in my opinion, in the pressing circumstances, than in assisting the