

the eastern railroads sought authority to advance freight rates. In that same time General Randolph also was instrumental in bringing about many conditions in connection with freight and passenger tariffs that have resulted in additional revenue to the railroads. General Randolph became chairman of the Trunk Line Association's executive committee in 1906, when he succeeded the late Nathan Guilford, at that time vice-president of the New York Central R. R.

Fire Brigades of the Grand Trunk Ry.

The Grand Trunk Ry. maintains employes' fire brigades at the various main repair shops, locomotive terminals and other large buildings. The organization comprises hose and hook and ladder companies, the members of which are supplied with coats, helmets, rubber boots, etc. The men are regularly drilled and reside within easy distance of the shops, in order that they can respond promptly to an alarm. The company recognizes the work of the men composing these fire brigades in many ways, granting additional free transportation to themselves and families, and awards prizes in the annual competitions amounting to \$250. Two of these competitions were won this year by employes of the car shops at London, Ont. The "dry" race was won by No. 2 company of the car shops at London, and they were also winners in the "wet" race. The hook and ladder race was won by a Montreal team from the car department.

Bill to Add Two Members to Interstate Commerce Commission.

A bill increasing the members of the Interstate Commerce Commission from seven to nine and providing for a division of the work into three sections, with three commissioners sitting in each, has been prepared with the approval of the commission and will be introduced in both houses of congress immediately. Senator Hoke Smith of Georgia is sponsor for the senate bill, and Chairman Adamson of Georgia will father the measure in the house. It is planned to detail two members of the commission to work exclusively on the physical valuation of the carriers. Some members of the commission, it is said, recommended that the body be enlarged to 15 members, which would have given President Wilson the appointment of eight. This was not well received by congress leaders.

Canadian Pacific Ry.'s Purchases for the British Government.

The arrangement by which the Canadian Pacific Ry. is purchasing military supplies for the British government originated in a trip which Sir Thomas G. Shaughnessy, president of the road, made to England. Before that time the amount of supplies ordered in Canada was small, because the British authorities did not know to what extent Canada could supply the articles needed; in fact, the orders at first did not total \$500,000. The Canadian Pacific, however, placed its purchasing organization completely at the service of the British government, dealing directly with manufacturers or their agents, and saving all intermediate profits. Purchases are now made from a room on Windsor street, Montreal, which displays no signs and hints no business, but which, nevertheless, is frequented by large numbers of representatives of firms which have goods to sell. To date more than five million dollars' worth of goods and materials have been purchased. Excluding horses, fodder and munitions, there is hardly anything that could be mentioned that the company is not interested in purchasing, if it can show relation to the needs of the military in the field. The orders include millions of pairs of socks and drawers. Shovels, spades, handled axes and tools of all kinds have been in great demand, and the country has been scoured for them. Wire cable was badly needed, and hundreds of miles have been ordered. Rubber boots of the full hip pattern have been bought, and

snowshoes, cheese, safety matches and evaporated vegetables, including potatoes. Cement sacks were secured from the Canada Cement Co. to the number of 8,000,000. In fact, there is nothing which could be included in the necessary outfit of troops in the field which is not in demand.

Canadian Railway Men's Construction Corps.

Reinforcements of 120 railway men have lately been recruited in Canada for the Canadian Overseas Railway Construction Corps. The original roll included 21 commissioned officers and 505 non-commissioned officers and men, and the corps has been in active duty in Belgium, but is now apparently in England again waiting to be sent on other service. The corps' principal work in Belgium had been the building of a narrow gauge railway behind the first line of trenches extending the whole length of the Belgian front. The train is drawn by a 7-ft. gasoline engine, the cars being just over 3 ft. high. Everything is painted the color of the earth, and when a German flare lights up the locality the train comes to a sudden stop and is practically invisible. By this train food and munitions and everything needed in the trenches is conveyed during the night. One section the Canadians built was over flat country five miles in extent, and they were much exposed to shell fire, but as they only worked at night the casualties were few. A Canadian exchange says: "The corps was also engaged in the construction of concrete emplacements for guns in the trenches and these have been so strongly constructed that when the big Allied drive took place the Germans shelled vigorously the Belgian lines, as a counter stroke, but the concrete and steel hoods, covered with loose earth and boulders, withstood all the explosives that were hurled against them, and as the machine guns covered every possible avenue of approach the Germans had no chance of reaching the Allied lines." The corps has been highly complimented and mentioned in battalion orders for the excellent work done abroad, and on November 1 it was announced that it was again under orders for foreign service, and reports stated that work was to be undertaken either in Russia or in the Persian Gulf territory.

Test of Regenerative Braking of Electric Locomotives.

The electric locomotives which the Chicago Milwaukee & St. Paul Ry. will put into service shortly on its electrified division between Harlowton, Mont., and Avery, Idaho, have as one feature of their design, what is called the regenerative braking system. By this arrangement the locomotive, when traveling on a down grade, runs its motors as generators; the connections being such that a braking effect is obtained, and at the same time a certain portion of the electric power thus generated is fed into the transmission line. This system is employed on electric locomotives of the Norfolk & Western Ry. and the Great Northern Ry., but the Chicago Milwaukee & St. Paul is the first to use it on direct-current locomotives. This feature of regenerative braking was subjected to a test, November 13, 1915, on locomotive No. 10201, one of the Chicago Milwaukee & St. Paul Ry.'s new equipment. The test was made on the Butte Anaconda & Pacific R. R., which line has been successfully operated by electric power for the past two years. The weight of the train was as follows:

	Tons
65 Ore cars at 70 tons each.....	4550
1 Caboose	15
1 Business car	94

Total excluding locomotive..... 4659

Total including locomotive..... 4943

This load was hauled from Rocket station to Anaconda Yards without the use of air brakes, except to stop at Durant and the Yards. Electric braking was used exclusively to

hold the train on the one per cent down grade, with the regenerated current averaging at times as high as 880 amperes, corresponding to approximately 2100 kw. returned to the line at substation voltage. The train was allowed to speed up to about 25 miles per hour on the down-grade, and was brought to as low as four miles per hour, with the electric brakes, in order to determine the wide field of application of this method of braking. The braking was very smooth and the reduction of speed from 25 miles to four miles was made without the slightest jar to the train. As the braking was done entirely by the engine the slack between the cars was bunched and at no time was there any danger of the train breaking in two. The run was stated to be satisfactory in every respect, and indicated the complete success of the regenerative method of braking.

Fred C. Blue, state prohibition commissioner, of West Virginia, has obtained an injunction prohibiting the Chesapeake & Ohio from allowing the transportation in that state of alcoholic liquors in personal baggage when the packages are labeled as containing intoxicants.

At the annual meeting of the American Society of Mechanical Engineers held in New York on Dec. 8 and 9, Dr. David Schenck Jacobus, professor emeritus of Stevens Institute, was elected president to succeed Dr. Brashear. Dr. Jacobus spent his entire professional career from the time of his graduation from Stevens Institute in 1884 until his retirement as professor emeritus in 1906, on the faculty of his alma mater. Since his retirement he has acted as engineering expert for the Babcock & Wilcox Co., at 85

Liberty street, New York, continuing in the meantime as a special lecturer in experimental engineering at Stevens Institute. He is the originator of much special apparatus for use in investigations in experimental engineering as well as the author of many valuable treatises on that subject.

The Supreme Court of the District of Columbia handed down a decision, December 6, which held that street railways which take on more passengers than a car can seat have no right to move such passengers about "like pawns on a chess board." A judgment of the lower court was affirmed, awarding \$1000 damages to William A. Morgan from the Capital Traction Co., whose motorman tried to enforce a "move up front" order.

At the hearing before the Interstate Commerce Commission on Dec. 4 relative to the locomotive headlight clauses in the newly established rules for the inspection of locomotives and tenders and as protested by the railroads, the chief inspector and his allied forces introduced a volume of new arguments relative to which the roads were allowed ten days in which to file a brief in rebuttal.

Not all of the \$45,839,510 asked of congress by the army engineers for the maintenance and improvement of rivers and harbors for the twelve months beginning July 1, 1916, is of the "pork" variety. But the proposition is large enough to admit of large cutting.

Over 500 bills were introduced in the house of representatives the first day and 1000 in the senate. Many of them are revivals of old bills.

Four-Tracking of the Hudson Division of the New York Central R. R.

The New York Central R. R. has been executing a series of improvements on its Hudson division, during 5 years past, all of which are related to a consistent plan for making the entire division four tracks or more. The improvements involve re-locations, grading, new structures including both bridges and buildings, and other important construction. Some of the work is exceedingly heavy, and all of it is of the most substantial description. It was required that it be carried out with the minimum inconvenience to the operation of traffic, which on the en-

tire division is very heavy. In planning the improvements, due allowance has been made for a considerable increase in traffic, so that the facilities provided might be ample for an extended period in the future. This not only applies to the additional trackage and the station improvements, etc., but also the signals.

The New York Central R. R. has had as its ultimate object the completion of a four-track railroad for the entire length of the Hudson division, between Albany and New



Fig. 1—New Station at Staatsburgh, N. Y., Built in Connection with Four-Tracking Improvements of the Hudson Division, New York Central R. R.