

outlet than is at present in use, which in turn would give a greater working capacity to our locomotives. The exhaust outlet's function is to produce sufficient draft to consume enough fuel to raise the necessary steam sufficient to haul the train over the road. Under present conditions this draft, or air, has to be produced through the fuel bed, which offers a great resistance to the incoming air and consequently a greater force has to be exerted than would have to be if the resistance was less. If we consume the gases that are being wasted, both as smoke and CO, with air that is, or can be, let in through the door, when there is absolutely no resistance, we will get this extra efficiency without any effort on the part of our drafting appliance, and will release that much work from our exhaust outlet. Another feature is that if we increase the efficiency of our fuel 10% by this means, we shall not need to consume so much by that amount. This again reduces the amount of work needed to be performed by our exhaust outlet. Consequently if we can reduce the amount of work done under existing conditions, we can naturally increase the size of the exhaust in proportion. The back pressure exerted upon the cylinders, by a reduced exhaust outlet, is greater than most of us think of and any increase in size will make a more efficient working locomotive. Therefore, if surface combustion is carried out, and especially with the aid of the brick arch, there is no doubt that a permanent decrease of 10% to 15% in railway fuel bills would occur, and with the best feature of all, a permanent abolition of the black smoke nuisance.

Quebec Central Railway Company's Annual Report.

Following are extracts from the report for the year ended June 30:

Freight revenue	\$1,215,001.08
Passenger revenue	445,919.44
Mails	28,285.64
Express, miscellaneous, etc.	36,821.56
	<hr/> \$1,726,027.72
Maintenance of way and structures ..	\$243,224.51
Maintenance of equipment	172,066.87
Traffic expenses	28,678.94
Transportation expenses	672,661.39
General expenses	59,926.06
Taxes	15,046.24
Expenses outside operations	15,797.03
	<hr/> Total operating expenses \$1,207,401.04
Balance carried to net revenue account	518,626.68
	<hr/> \$1,726,027.72

To the \$518,626.68 transferred from revenue account to net revenue account was added \$15,427.18, making a total of \$534,053.86. Out of this was paid \$255,560.94 for interest on debenture stock and 3rd mortgage bonds, leaving \$278,492.92 to be transferred to surplus income account, which, added to \$85,132.23 balance from 1915-1916, made a total of \$363,625.15. From this was paid 5% interest on share capital, \$169,080.16, leaving a surplus of \$194,544.99.

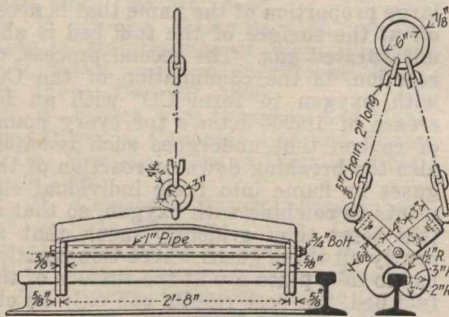
The directors are: Sir George Bury, President; I. G. Ogden, Vice President; E. W. Beatty, Montreal; J. H. Walsh, General Manager, Sherbrooke, Que.; T. Lindley and C. D. Brassey, London, Eng. L. A. Carrier, Levis, represents the Quebec Government on the board.

Under an agreement dated Oct. 2, 1912, the company's property was leased to the C.P.R. for 999 years at a guaranteed rental based upon interest on the mortgage bonds, and 4% dividend on the outstanding stock for five years from July 1, 1912, and 5% after.

Special Tongs Prevent Rails from Seesawing While Being Handled.

The accompanying sketch shows some simple rail tongs which have been developed on the Atchison, Topeka & Santa Fe Ry., and which have given good service, according to W. Barnes, Supervisor of Work Equipment at Topeka, Kan.

The length of these tongs, 2 ft. 8 in. between grips, is found sufficient to prevent rails from seesawing while being handled by a crane. The main part of the tongs is made from $\frac{5}{8}$ x 3 in. soft



Tongs Hold Rails Steady in Handling.

steel, the jaws being hinged on a $\frac{3}{4}$ in. bolt with a 1 in. pipe spreader. Each half of the tongs is connected by a 2 ft. length of $\frac{5}{8}$ in. chain to a large ring, which is hooked to the hoisting line.

United States Taxes on Transportation Tickets Etc.

The United States Government started on Nov. 1 to levy a tax of 8% on the amount paid by passengers for transportation on railways or steamships and 10% on the amount paid for seats, berths and staterooms in parlor cars, sleeping cars, or on vessels. The tax does not apply on commutation tickets for trips less than 30 miles, nor on passage tickets where the fare is 35c or less. The tax applies on tickets sold in the United States to points in that country, Canada or Mexico, and is assessed upon the total amount paid for transportation to destination and not on the amount paid for passage within the United States only. The tax is collected by ticket agents, who are required under the law to decline to issue tickets to persons who refuse to pay the tax. This tax does not apply on tickets issued in Canada to points in the United States, only the Canadian tax of 5c up to 15c and 1% over that being collected on passage tickets, with tax of 10c per berth on sleeping car tickets, and 5c on parlor car fares.

A tax of 3% is levied on all amounts for carriage of milk, skim milk, butter-milk, pot cheese, cream, condensed milk and evaporated milk in baggage car service, also newspapers carried in baggage cars, wholly in the U. S., or from one point in the U. S. to another point in the U. S. through Canada or Mexico.

A tax of 8% is levied on amounts paid for excess baggage.

Lt. Col. Blair Ripley, M.Can.Soc.C.E., formerly Engineer of Track Elevation, C. P.R., North Toronto, now officer commanding, 1st Battalion, Canadian Railway Troops, in Belgium, writes: "I am always pleased to open Canadian Railway and Marine World when it reaches me. It keeps me in touch with things at home, in a matter of fact way, and is passed around to the boys, all of whom appreciate it."

Railway Bridge and Building Men's Convention.

The American Railway Bridge and Building Association's convention held at Chicago recently, was largely attended.

The placing of new plate girder spans with the minimum interruption to traffic was dealt with in a committee report presented by Lee Jutton, Division Engineer, Chicago & Northwestern Ry. Two general methods are practicable: Piecemeal removal of the old and construction of the new spans, or the replacing of an entire span at one operation. Mentioned in the discussion that followed was the erection of concrete slab spans alongside the old work, with ballast and track complete. In this way the track could be connected up as soon as the new span had been moved into place.

Paint for steel and other structures was covered in a report presented by C. Ettinger, Illinois Central Rd. For steel work, he considered that the primer or first coat should be a rust-inhibitive coating with lead base. Carbon paints may be applied over this, but should not be applied directly to the steel. The report pointed out the economy of using high class paint for structures of this kind.

Concrete as a protective coating for steel structures was presented in a paper by E. E. R. Tratman, Western Editor, Engineering News-Record.

The importance of good housing and feeding as a means of keeping men in the crews of the railway bridge and maintenance of way departments was the subject of a paper by F. E. Weise, chief clerk, Chicago, Milwaukee & St. Paul Ry. engineering department. There are many objections to the use of cars, which are generally old cars removed from their trucks and mounted on sills. Buildings of concrete or of stucco on wire mesh are used in a few cases. Some railways and construction companies are introducing portable sectional knock-down houses. Most of these are of wood, but sectional steel structures for similar purposes are available.

Another subject discussed in regard to labor was the introduction of differential rates of pay for employees; that is, paying higher rates to men having the greater skill or experience.

A considerable number of women are employed by the C.P.R. on its Western Lines. Clerical positions in the general offices, freight offices and yard offices, vacated by men, have been filled by women. It was thought that women could not be used to advantage in yard offices, owing to the possibility that they might have to listen to objectionable language on the part of some men. No difficulty whatever has been found in this respect, the women having invariably been treated with every courtesy and respect. A number of women are being employed at Winnipeg, as passenger car cleaners, and are giving complete satisfaction. At Regina nine women were employed cutting grass and weeds in the yards, for about two weeks, and gave good satisfaction, but the management is not convinced, however, that women can be successfully used as ordinary track maintainers.

The Canadian Society of Civil Engineers', Regina branch has petitioned the Saskatchewan Government to restrict the practice of civil engineering to members of the Society.