tread of the present wheel as compared to the wheel under the 10-ton car. Also the flange thrust being from 5 to 10 times greater indicates that we have 10 times the force to contend with than we formerly had.

The information obtained would indicate that in order to design a wheel that will fit a given condition of service, it requires a thorough understanding of the intensity of the stress in each part of the wheel and the relation of the stresses to service conditions. The manufacturers' association believes that due to the general conditions existing at the present time, and considering the safety factor of operation, three designs of wheels of 675, 750 and 850 lb. (with 3/16 in. increase in flange), respectively, for 30, 50 and 70-ton cars, would in a great measure solve present troubles and the recommendations are: 675 lb. wheels for cars having a maximum gross load of 112,000 lb.; 750 lb. wheels for cars having a maximum gross load of 161,000 lb.; 850 lb. wheels for cars having a maximum gross load of 210,000 lb.

No railway material sold today is so necessary for operation and comprehends so low an initial investment to the railways as the chilled iron wheel. The 8,000,000 tons of chilled iron wheels running today possess a higher relative market value when worn out, based upon their first cost, than is usual with other commodities purchased by the railroads. Hundreds of thousands of chilled iron wheels have been sold at a differential of $10 a ton, which represents the difference between the original selling price and the scrap value of the old worn out wheels, and this $10 a ton differential represents the cost of reconverting the old wheel into a new one plus the necessary labor, plus the price of the new material and the profit of the manufacturers. Special wheels are purchased by many railways at a higher differential than $10 a ton, and some foundries, located in remote parts of the country, far from raw materials, such as coke and pig iron, must receive a higher price. About 30% of all wheels sold are removed by foreign lines and the price paid for these removals is fixed by the printed interchange rules of the M. C. B. Association, as follows:

	Chilled Iron.	Steel.
New value, each	$9.00	$19.50
Scrap value, each	4.75	4.50
Net cost	$4.25	$15.00
Cost of removing from and replacing in trucks, per pair, $2.25 each	1.12	1.12
Cost under car, each	$5.37	$16.12
Cost of two turnings	....	3.25
Total cost of wheel service, each	$5.37	$19.37

The total cost for wheel service for other types of wheels is about four times that of the chilled iron wheel and upon this basis of comparison any substitute must yield four times the mileage or time service in order to equalize the cost. As the master car builders fix the price of removals on the 30% of equipment on foreign roads, it must follow that the same relative basis of cost applies on the 70% of removals on a road's own lines. Chilled iron wheels sold at a differential of $10 a ton, make the net cost of the three M. C. B. standards as follows:

625 lb. M. C. B. wheel for 30-ton cars, $3.12
675 lb. M. C. B. wheel for 40-ton cars, $3.37
725 lb. M. C. B. wheel for 50-ton cars, $3.62

The maximum cost of the 625 lb. M. C. B. wheel, guaranteed for 6 years, is 52c a year; that of the 675 lb. wheel, guaranteed for 5 years, is 67c a year; and that of the 725 lb. wheel, guaranteed for 4 years, is 90c a year. Any wheel that is sold for $20 will cost the railways, in interest charges alone, (at 5% per annum) more than the renewal charges of the chilled iron wheel, because while the guaranteed net cost to the railways is based upon six, five and four years service, respectively, the actual service is often twice as much.

Transportation Conference at Ottawa.

On Mar. 6, Sir Geo. E. Foster, Minister of Trade and Commerce, wrote a number of leading railway and steamship officials as follows: "The problem of transport for the current year is a very serious and complex one for the whole of this continent, and is by no means any less pressing and important for Canada. There is a great quantity of western grain to be moved from the interior and the head of the lakes and across the Atlantic, which should be cleared out before the next crop ripens. The St. Lawrence and our Canadian ports should, under all the circumstances, be able to command a large portion of this traffic, and the ocean tonnage to be provided by the allied governments for carrying munitions, war supplies and foodstuffs should be made to help in this direction. United action and thorough co-operation on the part of all our transport agencies would contribute greatly to the end desired, and it has been suggested that a conference of these various agencies would be advisable and helpful. Acting on that suggestion, I have invited them to meet in Ottawa on Mar. 19 for an interchange of views on the above mentioned subject. I would be glad, therefore, if you would kindly send a representative of your ocmpany to attend this meeting, the object of which will be generally to exchange views and consider what steps can be taken to ensure the greatest possible movement of grain and other commodities from Canadian ports, and to facilitate and speed up this movement."

In response to the invitation, a number of prominent officials of the Canadian Pacific, Grand Trunk, Canadian Northern, Canadian Government and other steam railways, of the Canada Steamship Lines, Ltd., and other steamship companies, and of the St. John, N.B., Quebec and Montreal harbor authorities, attended at Ottawa and were received by the Ministers of Trade and Commerce, of Customs, and of Railways. As the Ministers had to leave to attend a memorial service for the Duchess of Connaught, the meeting was turned over to Sir Henry Drayton, Chief Railway Commissioner, who took the chair, and there was considerable discussion but no definite conclusions were arrived at and no committees were appointed.

The Minister of Trade and Commerce states that the representatives present were asked to work along the following lines: To see that the grain remaining in the northwest is brought down to the head of the lakes speedily. This duty rests upon the railways and they state that they are quite able to accomplish it with speed and efficiency. The next step is between the Great Lakes and Montreal ,and the information is that Canadian lake shippers have tonnage sufficient and will find no difficulty in moving the grain from Fort William to the bay ports and Montreal, if the railways will co-operate across Ontario with dispatch and efficiency and prevent delays at the bay ports and transfer elevators. The railways chiefly interested in that operation are the Canadian Pacific and Grand Trunk, and these two companies are asked to make such arrangements as will quickly lift from the bay port elevators the grain which is brought down across the lakes and run it into Montreal and possibly Quebec. There is not very much prospect of a large portion of grain being taken down from Port Colborne to the St. Lawrence, owing to the scarcity of canal boats, but whatever can will be done in this direction. The facilities at Montreal are first class and steps are being taken for such co-operation as will ensure a large output from that port, quite as much, it is thought, as transport across the ocean can be obtained for carrying away. Greater difficulty will be experienced in reference to the coal supply, and investigation is being made as to how the output of the Nova Scotia mines and the transportation system of the St. Lawrence can best be facilitated. This latter is a very hard proposition at the present time.

Ontario Railway and Municipal Board Act Amendments.

The Ontario Legislature has before it a bill amending the Ontario Railway and Municipal Board Act. The amendments provide for giving the board jurisdiction over all incline railways in the province; provides that the Chairman shall receive a salary of $7,000 a year, the Vice Chairman $4,500 a year, and the Secretary $2,800 a year; the increased salaries of the Chairman and Secretary to date from Oct. 31, 1916.

A new section, to be numbered 38a, is added, providing for a penalty not exceeding $1,000 in addition "to any other penalty provided in this or any other act" for contravention of the board's orders and in default of payment there is an alternative of imprisonment for not exceeding 30 days. Subsection 2 declares that each successive day during which such act or omission continues is a separate offence; subsection 3 deals with the manner of imposing the penalties, and subsection 4 provides that sheriffs and other police officers shall assist in enforcing the board's orders.

Canadian Society of Civil Engineers Secretaryship.—Prof. C. H. McLeod, who has been Secretary for nearly 30 years, having resigned, has been succeeded by Fraser S. Keith, B.A.Sc., A.M.Can.Soc. C.E., who was born at Smiths Falls, Ont., June 8, 1878. After an apprenticeship in the hardware business, he entered the Faculty of Applied Science, McGill University, Montreal, in 1899, spent his summer holidays at machine shop work, electric power plant operation, etc., and graduated with honors in electrical engineering in 1903, his summer thesis winning the Can.Soc.C.E.'s mechanical section's prize. In 1904 he was senior electrical demonstrator at McGill University, and in 1905 he went into technical newspaper editorial work. In 1908 he went to Vancouver and engaged in manufacturing concrete materials and in concrete construction. He returned to Montreal in 1915, since when, until his recent appointment, he was again engaged in technical newspaper work.

Faculty of Applied Science, Toronto University.—It is officially announced that 765 men have enlisted for overseas service, including 16 members of the staff. Seventy-five have been wounded, 45 killed and 38 have received military honors.