

Hand, resident engineer for the government in charge of the ship channel work; and E. L. Cousins, chief engineer and manager of the Toronto Harbor Commission.

Lionel H. Clarke is chairman of the Toronto Harbor Commission; E. L. Cousins, chief engineer and manager; James R. Wainwright, assistant chief engineer; George T. Clark, designing engineer; A. C. Mitchell, superintendent of construction; N. D. Wilson, engineer of surveys and lands; J. E. Hollaman, assistant on special works; H. S. Bedell, chief draftsman; John Lee, secretary; J. S. Murray, comptroller; J. S. Cole, purchasing agent; and A. H. Chapman, consulting architect.



Type of Structures Being Built in Harbor-Terminal District. From Left to Right, Harbor Board's Machine Shop and Yard Offices, Queen City Foundry, and New Steel Plant

We are indebted to Messrs. Cousins, Wainwright and Lee for the above information, to Mr. Clark for the diagrams, and to Mr. Hollaman for the photographs.

Among other illustrated articles that have appeared in *The Canadian Engineer* regarding the Toronto Harbor work, are the following:—November 21st, 1912 describing the general scheme; October 1st, 1914, describing 1913 engineering features of the work and giving synopsis of 1914 activities; June 10th, 1915, reviewing the previous work and that then under way; August 5th, 1915, describing the "Cyclone" and "Tornado" dredges.

STATE SUBSIDIZED STEEL PRODUCTION IN NORWAY

For some time means have been discussed for increasing Norway's production of iron and steel, so as to make the country more independent of foreign supplies, a shortage of which might prove a most serious matter, not only for the Norwegian industry, but also, and even more so, from a military point of view. The Strømmen works will receive a subsidy of 51,200 kroner, so as to be able to increase their production of steel from 5,000 tons to 10,000 tons per annum. In order further to increase the Norwegian production of steel from 12,000 tons to 24,000 tons and to put down a rolling mill having a minimum annual production of 10,000 tons of rolled products, the Christiania Spikerverk is to receive, for a period of five years, a premium of 8 kroner per ton of rolled steel made. The new installations at the Strømmen works are not supposed to commence operations until war mobilization takes place, and the steel to be produced there will be ingots for projectiles, etc. The Christiania Spikerverk, on the other hand, is to start under the new scheme in peace time only, and its rolled products are to be mainly for use in ferro-concrete work.

The total imports of English coal into France during the first four months of this year amounted to 5,500,000 tons, as against 6,400,000 tons during the corresponding period in 1916, and 5,892,780 tons in 1915.

NEW TRAFFIC RECORD ESTABLISHED

Fifth Avenue at 42nd Street, New York, has long been known as the heaviest traffic centre in the United States, says a bulletin issued by the Barber Asphalt Paving Co. A traffic census just completed by the Fifth Avenue Association shows that in spite of every effort to divert vehicles to other streets, the Avenue is maintaining its reputation. According to the association figures, which represent vehicles of all kinds passing the Public Library, between 41st and 42nd Streets, the volume of traffic totals in 10 hours (from 8 a.m. to 6 p.m.) 16,960 vehicles.

Northbound and southbound traffic is about the same—8,513 northbound and 8,447 southbound. Included in the total of 16,960 are 1,296 motor 'buses—130 per hour in both directions. The total traffic averages 28 vehicles per minute.

At the point where this census was taken Fifth Avenue is 50 feet wide which, theoretically at least, permits the movement of six lines of vehicles. The count showed that passenger motor vehicles composed about two-thirds of the traffic, but these included the ponderous motor 'buses which are heavier than most commercial motor cars. The pavement carrying this enormous weight is sheet asphalt, 1½-in. close binder and 1½-in. top, on a 6-in. concrete base. It was laid in 1913, replacing a similar pavement which was 17 years of age when relaid. The analysis of the top mixture used in this pavement shows a high percentage of bitumen and a correspondingly high proportion of fine material. An average of 11.7 per cent. of Trinidad asphalt was maintained throughout the laying of the pavement, although 10.5 per cent. was all that was required. The complete analysis of the surface mixture is as follows, the standard being given for comparison with the actual composition of the Fifth Avenue pavement:—

	Standard.	Fifth Avenue.
Asphalt	10.5%	11.7%
200 mesh	13	17.3
100 "	13	10
80 "	13	22
50 "	24	23
40 "	11	5
30 "	8	8
20 "	5	2
10 "	3	1

The box measurements for the top mixture were 720 lbs. of sand, 105 lbs. of dust, and 175 lbs. of asphalt cement. For the binder course the measurements were 600 lbs. of stone, 310 lbs. of sand and 90 lbs. of asphalt cement.

By a recent decision of the court of appeals at Albany, N.Y., the International Bridge Company must live up to the literal terms of its American charter, and erect a foot and carriageway addition to the International Bridge at Niagara.

The collieries of India, and especially those in the Bengal coalfield, have, during the past few years, been gradually adopting electricity as a motive power in place of steam. Companies owning a number of collieries have recently effected an economy by installing units at a central station and distributing electricity to the various collieries. Coal cutting machines have not made much headway, but there are several in use, chiefly of the "hammer" type worked by compressed air.