

of narrow gauge, with switches and turntables, are laid throughout the entire works, for the economical handling of all material. All the shops are well ventilated and heated with steam.

A complete system of fire hydrants is arranged both inside and outside the buildings, and connected to the city water mains, and the doors in fire walls are "sliding" and fire proof, and so fixed that in the event of fire they will close automatically. There are also lavatories and other conveniences in each shop for the comfort of the employees, and a general dining-room 32 feet by 50 feet.

The Portland elevator, which is in course of construction, is a plank and frame structure 221 feet long by 98 feet wide. The foundations are supported on piles with proper grillage, the piles being cut off and capped at about 2½ feet below the level of mean high tide. The dimension stone of the foundation masonry is of first-class granite pier stone, and the rubble used is good flat-bed ledge stone of uniform thickness. The first story will be built of heavy post and girder work. The bins are to be 65 feet deep, made of laminated two-inch planking, and surmounted by a cupola running the entire length of the building, and five stories high; the walls will be covered with galvanized corrugated iron, and the roofs with tar, felt and gravel. The building will be equipped with ten elevator legs, five on either side, five belt conveyors being located in the basement, to carry grain across the house and discharge it to the five elevators on the south side. In the first story there will be ten pairs of power-shovel machines for unloading cars, and two car pullers are so arranged that cars can be handled on both railroad tracks, which run through the elevator. There will be ten hopper scales, having a capacity of 72,000 lbs. each, surmounted by a hopper of 1,200 bushels capacity. On the bin floor there will be a complete system of iron trolley spouts for discharging the grain into the bins. All the belt conveyors and elevators will be supplied with friction clutches, so that they can be stopped and started when the shafting is running at full speed. On the south side of the elevator and extending nearly the full length will be a belt-conveyor gallery, which will be connected with branch galleries on either side of the Atlantic wharf; these galleries will be equipped with self-propelling iron trippers for discharging the grain into the spouts, which conduct the grain to the hatches of the vessels lying alongside the wharf. The capacity of the elevator is a little over 1,000,000 bushels. The engine and boiler-room is of brick, 80 feet long by 41 feet wide, with walls 24 feet high. The smoke-stack will be 160 feet high, with flue 5½ feet in the clear, and will be built of steel plates, lined with brick the full height.

As an example of how crude some of the English horseless vehicles are, a correspondent of THE CANADIAN ENGINEER writes from London: "Our Mr. B. was at the recent London-Brighton race, and there observed among the best of the horseless carriages one which was driven by a belt, and the brake was applied on the outer surface of the belt as it runs over the pulley. Of course the belt would be stretched and the lacing cut off in a very short time. The gear wheels also have the great objection of being open to the dust and grit which blows up when travelling over dusty roads."

PRODIGAL ONTARIO.

Ontario has no coal, or if she has, it is not at present available; south-western Ontario has no wood, and so the most densely settled portion of the province is dependent on fuel which is brought great distances for heating and power purposes. When this is the case it would be expected that such other natural sources of power as she may possess would be most carefully preserved against exhaustion, and employed exclusively in the development of her own industries. How far this is from being the case is shown by the fact that the Ontario Government actually accepts \$25,000 from an alien corporation as payment for preventing anyone in Ontario benefiting by the enormous supplies of power allowed to go to waste at Niagara. There is one other source of power in south-western Ontario, and this is in large part sent out of the country and used to develop competing industries. This is natural gas. In 1895 the gas wells of Ontario produced 3,320,000 feet of gas, and \$73,328 were paid in wages for its production. Of this it is safe to say that the greater part was used outside the country, and that no benefit accrued to Canada from its use aside from the money spent in its production.

In this connection, it is of interest to note the comparative value, as a steam producer, of natural gas and anthracite coal. The average constituents of the two fuels are:

	Carbon.	Hydrogen.	Oxygen.	Nitrogen.	Sulphur.	Calorific value.	Calorific intensity.
Anthracite	91.86	3.33	3.02	0.84	0.92	5,337	2,380° C.
Natural gas...							
	Methane CH ₄	Hydrogen.	Oxygen.	Nitrogen.	Ethylene C ₂ H ₄		
	67	22	0.8	3	5		
					C ₂ H ₂		
					1		
					CO ₂		
					0.6		
					CO.		
					0.6		
						15,000	2,750° C.

From this it is easily deduced that one thousand feet of natural gas is equal to slightly more than one hundred pounds of coal. The gas product of Ontario, in 1895, is therefore equal to over 166,000 tons anthracite coal, an amount equal to one-half that received at the port of Toronto during the season of 1896.

ONTARIO LAND SURVEYORS.

The general annual meeting of the Association of Ontario Land Surveyors will be held this year, for the first time, in the comfortable rooms of the association at the new Parliament Buildings, beginning Tuesday, 23rd February. Among the papers which will be read are the following: "Irrigation in the Canadian North-West Territories," by Wm. Pearce, D.L.S., Dominion Superintendent of Mines; "Macadam Streets in Towns," by W. A. Campbell, D.L.S., Provincial Instructor in Road-making; "Sewage Disposal," by Capt. W. F. Van Buskirk, D.L.S.; "Surveying and its Instruments," by Sherman Malcolm, D.L.S.; also a number of others. The meeting will occupy three days.

At the annual meeting of the Hamilton, Grimsby and Beamsville Railway, the financial statement showed that the gross earnings for the year have been \$35,277.91, and the expenditure charged to current account, \$24,121.87, leaving a net revenue of \$11,156.04. This is equal to about 9¼ per cent. on the capital stock. The number of passengers carried was 243,394, and receipts from freight amounted to \$3,886.97.