VIII.—CANALS.

Historical.—Before the period of extensive railway construction which commenced for Canada in the 1850's, the water routes, more especially the St. Lawrence, the Great Lakes, and the Ottawa, were the chief avenues of transportation. These routes were interrupted at certain points, necessitating portages. The canals of Canada were, in the main, constructed to eliminate the toil of unloading, transporting and reloading at the portages.

The earliest mention of canals in Canada is in connection with the Lachine canal, begun by early French settlers in 1700, but only after the conquest of Canada by the British were improvements of the main water routes made, and in the early part of the 19th century, increased internal and foreign trade and the introduction of steam navigation resulted in more attention being given to this work. Although for a time the canals were constructed primarily for military purposes, they soon became essential to the commercial life of the country.

Canal Systems.—There are six canal systems under the control of the Dominion Government in connection with navigable lakes and rivers. They consist of the canals (1) between Port Arthur or Fort William and Montreal; (2) from Montreal to the international boundary near lake Champlain; (3) from Montreal to Ottawa; (4) from Ottawa to Kingston and Perth; (5) from Trenton, lake Ontario, to lake Huron (not completed); and (6) from the Atlantic ocean to Bras d'Or lakes, Cape Breton. The total length of the waterways comprised within these systems is about 1,594 statute miles, the actual mileage of canals constructed being 117·2.

The St. Lawrence group, part of the Montreal to Port Arthur system, comprises seven separate canals at different points between Montreal and Prescott, not including the so-called "submerged" canal or channel dredged through shallow parts of the river between Montreal and Quebec. Chief of these is the Lachine canal, originally designed to be a mile in length, with a width of 12 feet and a depth of 18 inches. First opened in 1824 and finally completed in 1901, it is now navigable by vessels drawing 14 feet of water.

The Welland canal, connecting lake Ontario and lake Erie, overcomes their difference in level of 325½ feet. Commenced in 1824, it was opened in 1829, and has since been remodelled on several occasions. At present the channel from Port Colborne to Thorold is being altered to admit the passage of large lake boats, and a new channel from Thorold to a point 3 miles east of Port Dalhousie is in course of construction. The total distance traversed by the New Welland from lake to lake will be 25 miles. The difference of level between the two lakes will be overcome by seven lift locks, each having a lift of 46½ feet. The locks are to be 800 feet long and 80 feet wide in the clear, and will provide a depth of 30 feet of water over the mitre sills. The width of the canal prism is to be 200 feet. A new breakwater is being built at Port Colborne, extending 2,000 feet farther into the lake than the present one. Extensive harbour works are contemplated for the lake Ontario entrance at Port Weller. It is expected that upon the completion of the New Welland there will be a reduction of about 2 cents a bushel in the freight rate on east-bound grain shipments, and that a large proportion of Canadian grain now being shipped by Buffalo and New York will be diverted to the St. Lawrence route.

The Sault Ste. Marie canal, next in importance to the Welland in respect of tonnage carried, was opened for navigation in 1895, and has been of vital importance to the traffic in grain and iron ore on the Great Lakes. Although a marked decrease in tonnage is shown during the last ten years, much of this is due to the