

as regards suburban railways, notably in the case of the Charlevoix road and Hull and Alymer railway, where water is doing the work which has heretofore been done by coal. The chief obstacles to an early change on the larger roads are the hundreds of millions invested in locomotives, and the very large outlay required to equip existing steam roads with the electric system. The principal inducement would be the passenger service, owing to the increased speed possible—it being confidently stated that, with electricity, a speed considerably over one hundred miles per hour could be attained. Moreover, there would be the entire abolition of the poisonous smoke which drops upon the Pullman in preference to any coach ahead of it. While the conversion of trunk lines would be attended with a cost which is for the present prohibitory, this objection does not apply to new lines which may be worked independently, or in connection with electric ones. When the time arrives for such railways, water power will have a field of usefulness of which we can at present form little conception. Water wheels and wires would displace the coal docks, the coal laden vessels, the huge coal yards, and the trains required for distributing their contents over hundreds of miles of lines. An interior line connecting Lake St. John, on the Saguenay, with Lake Temiscamingue, on the Ottawa, which could ultimately be extended, via Missanabi, Nepigon, and Lac Seul to the Saskatchewan, would be a colonization road, removed from the frontier—one which could be worked possibly altogether by water power, and would open a virgin tract in which electro-chemical and electro-metallurgical industries might arise, as well as those connected with the products of the forests and the mine.

The more extended use of our water power, in the immediate future, for manufacturing and mining purposes, especially for the electro-chemical and metallurgical productions, naturally leads to the consideration of the character of the output, especially with regard to markets, and transportation problems generally. Transportation, next to production, is the most important commercial question to a country of vast distances and low-priced products, affording great tonnage, such as we produce; and for which we have expended hundreds of millions in canals and railways, harbors, light-houses and steamers, a sum disproportioned to our realized wealth, as it certainly is to our population. But, "*noblesse oblige*," we possess a vast estate, are compelled to develop it—and await results. The question of transportation determines, to a great extent, the existence, or otherwise, of a possible industry, and enhances or diminishes the value of every article of export just in proportion to its efficiency and economy. On the other hand, where transportation is necessarily expensive, cheap production may maintain an industry—and here is where our abundant water power may come in. The geographical position of Canada in relation to the commercial centre of gravity of the North American continent is at least noteworthy. This centre is very near Lake Erie. From the western end of this lake the water route to the Atlantic at the Straits of Belle Isle follows the general direction of a great circle which cuts the commercial heart of Europe, and is therefore upon the shortest route, or "air line." Our two peninsulas, Sarnia-Detroit and Sault Ste. Marie, which are the rail-

way gates of the lake region, afford the most direct routes to the Atlantic for all the North-Western States, and are traversed by the trunk lines of railway. From Lake Erie water communication on the largest scale extends through Lake Huron to the extremities of Lakes Michigan and Superior. One-third of the population of the United States are dependent upon the Great Lakes, largely as to exports and imports, and wholly as to rates—which are fixed by the water for the rail routes. One-half of the population of the United States is found within a radius of 400 miles from Cleveland, a Lake Erie port claimed to be second only to the Clyde, as a shipbuilding one, and also the largest iron ore market in the world. The paper and pulp industry, as well as some of the electro-chemical and metallurgical ones (to the present list of which many additions may be made), are distinguished by the large tonnage produced, the output of several pulp mills exceeding one hundred tons per day. For this the St. Lawrence is the natural route for exportation, and to it this heavy tonnage is of the greatest importance as a means of attracting "tramps," as well as liners during the open season. Increase of sea tonnage into the St. Lawrence is essential to our inland commerce; by it only can sufficient west-bound freights be secured to attract a proper share of the commerce of the lakes, after all has been done to give to the latter quick despatch at Montreal or Quebec. There is probably no place in the world where inland transportation is carried on with greater expedition and economy than in the valley of the St. Lawrence. This is due to the character of the inland navigation, unequalled elsewhere, and to the influence which this exerts upon the railways competing with it; and also, because the valley of the St. Lawrence is not only the greatest highway for agricultural products, but of mineral ones, as well as of the products of the forest and the fisheries. More than half of the iron ore produced in the United States is mined around Lake Superior. Into this lake an increasing number of railways are pouring the produce of the vast wheat fields between it and the Rocky Mountains, and thus placing this grain within a thousand miles of Montreal, which is the nearest seaport, by hundreds of miles, and the only one which can be reached by vessels capable of navigating the lakes. Wheat grown in the foot hills of the Canadian Rockies has already reached Lake Superior by an all rail haul of 1,500 miles, a distance considered prohibitory in the early days of railways, as one which would absorb the whole value in the cost of carriage. The lateness of harvest in our North-West, and the early closing of navigation in the St. Lawrence, will soon over-tax all our means of transport, both water and rail, during the interval between September and December. The Welland and St. Lawrence canals and the portage railways between Montreal and Lake Huron constitute the Canadian routes, and much, which cannot arrive by water in time for export, will be stored up at nearest lake ports for winter railway carriage to tide water warehouses on the St. Lawrence, for export at Atlantic ports—or for conversion into flour at Ontario and Quebec water powers. This accumulating tonnage from our Western plains and our Eastern forests must call for a proportionate extension of export facilities which should attract tonnage to the St. Lawrence. Already Montreal has eighteen regular lines of