

factured. In Ontario, although we have no coal we have rich magnetites and hematites in well-wooded parts of the country where charcoal is cheap. Charcoal furnaces would have as good a chance to succeed in many of these districts as on any part of the continent if the whole continental market were open to them. Rich ores from the northeastern part of Ontario could be delivered at Toronto very cheaply, and Connellsville coke would not cost more than in Chicago if there were no duties."

Mr. Ledyard also gives some facts showing the richness and extent of Ontario iron ore deposits, and supplements this by quoting from the testimony of an American expert published in the Ontario report.

In a previous issue of this journal we reproduced a portion of the testimony of Mr. Ledyard published in the report, by which it was shown that the ores from some of the rich mines to which he alludes can actually be laid down in American cities, duty paid, for from seventy-five cents to \$1.50 a ton less than what similar ores can be laid down for in those cities from the American mines on Lake Superior, leaving to the Canadian shipper a profit of at least \$2.50 a ton.

It is claimed that the manufacture of pig iron in Canada cannot be a successful industry under our present fiscal system. Mr. Ledyard says that a few blast furnaces well situated might succeed but the output would be comparatively small. Our population is too small and too scattered to warrant the erection of iron works. Let us see. The importation of pig iron into Canada last year was 72,000 tons, and this, with the domestic production, amounted to a little over 100,000 tons. This quantity would, of itself, give employment to quite a number of furnaces—at least three times as many as we now have. The value of our importations last year of iron and steel and manufactures thereof which were dutiable aggregated \$9,680,967, and those admitted free of duty \$2,550,746, a grand total of importations valued at \$12,231,713. It is impossible to give the actual weight of all the articles included in this valuation, but there were 1,727,334 cwt. of steel rails, valued at nearly \$2,000,000. It is true that there are articles included in both the free and dutiable lists that are not manufactured in Canada; but there are but few of these that could not be produced here if the mantle of our National Policy was wide enough to afford them sufficient protection. If any considerable portion of these manufactures had been produced in Canada it is clearly to be seen that their production would have required immense quantities of pig iron—the manufacture of the steel rails alone would have called for probably 150,000 tons. Pig iron is the raw material entering into the production of the whole list included in this valuation of more than \$12,000,000 of imports into Canada last year.

The mossbacks who tell us that our population is too small and too scattered to warrant the erection of iron works in Canada certainly have no conception of what it would mean to expend \$12,000,000 a year in Canada in the many branches of the iron industry, in addition to those we already have. It would mean the active working of many of the mines that are now unworked, giving remunerative employment to thousands of miners, and creating vast quantities of freight for railroads and vessels. Blast furnaces would spring up wherever the circumstances were favorable. Steel plants would not only manufacture the steel for making rails, but would also pro-

duce that which is now imported for the manufacture of agricultural implements, farm, sawmill, flourmill and other machinery; and the fact that mills were rolling out steel rails for Canadian railways would mark one of the greatest epochs in Canadian history.

One need seek no further than the report on the Mineral Resources of Ontario for evidence to establish the fact that Canada might even now, under an insufficient tariff, become the manufacturer of all the pig iron she requires. It mentions the names of some of the large consumers of pig iron, many of which use charcoal iron for which they pay from \$27 to \$45 a ton, nearly all being imported from the United States, other sorts of iron costing from \$20 to \$25 a ton, including duty; while at the same time the testimony of expert furnacemen is given in detail, showing that charcoal iron can be made in Canada at a cost ranging from about \$9 to \$17 a ton. Beginning on page 331 of the report, the particulars are given showing the quantities of ore, flux, fuel, labor, etc., required per ton in the production of iron in Canadian furnaces of different sorts and capacities the summing up of which we reproduce as follows:

Marmora furnace.....	\$18 50
Madoc furnace.....	12 00
Mr. W. H. Merritt's estimate.....	18 09
Mr. John Birkenbine's ".....	12 85
Mr. J. B. Witherow's ".....	10 00
Messrs. Taws & Hartman's ".....	13 80
Mr. C. J. Pusey's ".....	9 08
Mr. C. J. Pusey's ".....	11 46
Mr. William J. Rattle's ".....	11 25
Mr. E. C. Garlick's ".....	14 30
Mr. Gerhauser's ".....	16 12

Mr. W. J. Rattle, a mining engineer of Cleveland, O., who gave evidence before the Commission, and whose estimate we have quoted, thought that a margin of \$6 a ton should be ample encouragement in the manufacture of iron, and that, obtaining this profit, Canadian furnaces could well afford to sell their product at \$18 per ton. This estimate was based on the use of Connellsville coke as fuel, producing an iron equal to best Scotch pig. According to the estimate of Mr. Garlick, who figured in the production of charcoal iron to cost \$14.30 per ton, it is shown that as against similar iron imported from the United States at a cost of \$26 a ton, the profit on the Canadian iron would be \$11.70 to \$14 per ton.

The testimony of Mr. Ledyard himself before the Commission proves our contention. He stated that he had received an estimate from Mr. J. B. Witherow, of Pittsburgh, Penn., for the manufacture of charcoal iron at the Belmont mine (near Ottawa) at an actual cost of less than \$10 a ton; and that the estimate further included a Clapp-Griffith steel plant capable of producing steel at \$14 a ton. "We could deliver the ore at Toronto," Mr. Ledyard said, "supposing the company owned the mines, at \$2.25 per ton—\$1.50 to mine it and seventy-five cents for freight. In Chicago good Bessemer ore is \$5.25 to \$5.75 per ton; with the fuel as cheap and the ore at half price, we should stand a good chance if we had the same market." In other words, Mr. Ledyard tells us that charcoal iron can be made in Canada at actually less than \$10 a ton, (the cost of charcoal iron in Canada ranges from \$27 to \$45 a ton), that Clapp-Griffith steel can be made in Canada for \$14 a ton (worth here more than charcoal iron), and that with Bessemer ores in Toronto at half the price of Bessemer ores in