

"With such a price for the energy required, the small consumption of electrode, the cheapness of ore employed, and the peculiar excellence of the pig iron produced, electric smelting of iron ores in Canada, using charcoal or peat coke, made from our peat bogs of enormous extent, may be pronounced a commercial success. Under the prevailing conditions in Canada it now only remains for the engineer to design a plant on a commercial scale, say of 100 to 150 tons daily output, with all the necessary labor-saving appliances. Just as in the case of the blast furnaces, so likewise with the electric furnace, experience gained will result in further economy, and the day may not be far distant when the carbon monoxide, which is of high calorific value, and which at present, as a product of the reaction taking place in the electric furnace, is allowed to escape without utilization, will be employed for increasing the output by at least a third or half. If that should take place the blast furnace could not compete with the electric furnace even under the conditions

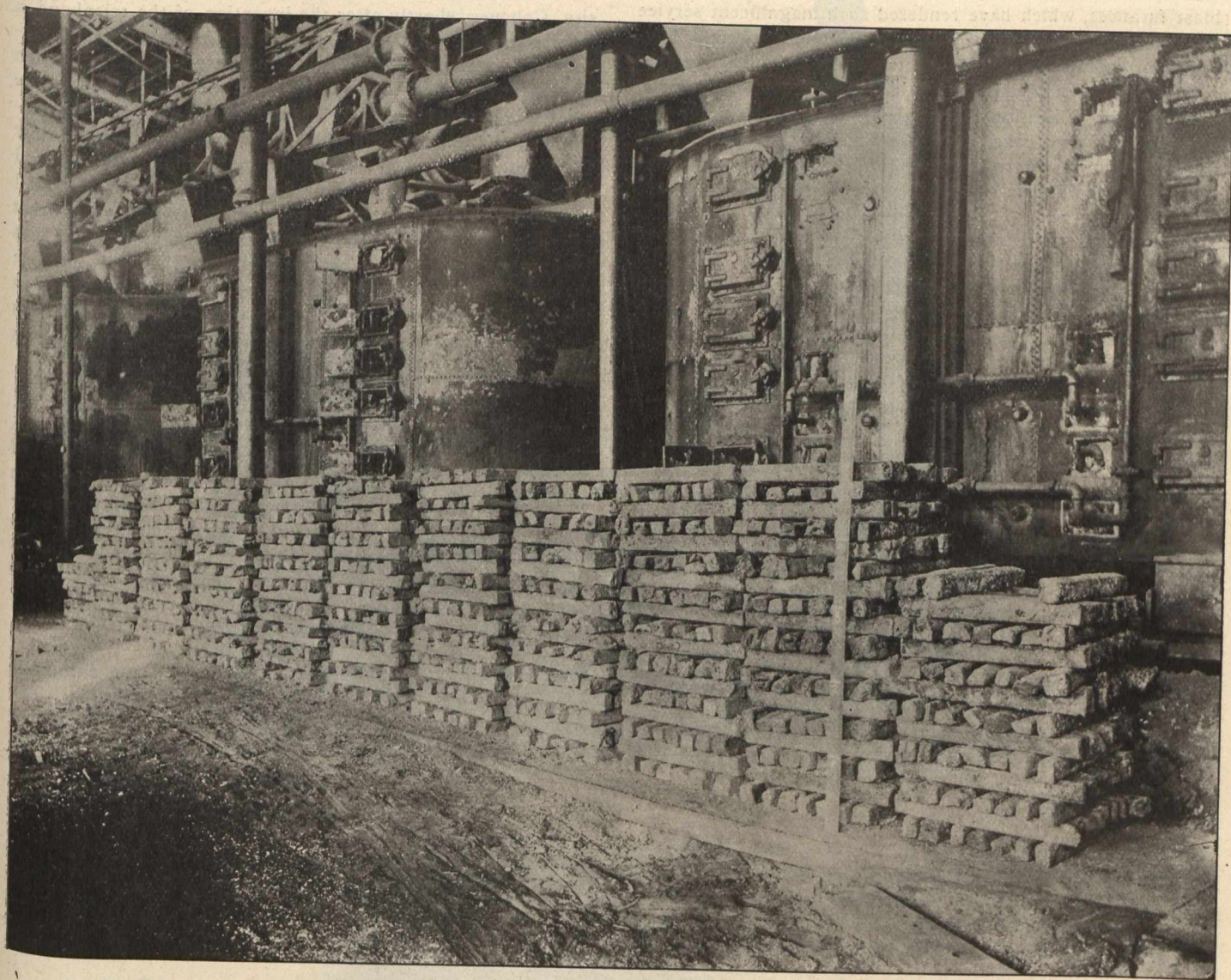
"When a deposit is worked out the furnaces may be moved to the next deposit, simply lengthening the wires which carry the high tension current to the transformer or the plant."

This method is especially applicable in the case of the many pockety deposits of magnetite which occur in the Ottawa Valley.

Successful Results of Experiments.

"The following is a summary of the results of the experiments which have been completed under Government auspices at Sault Ste. Marie:

- 1.—Canadian ores chiefly magnetite can be economically smelted by the electro-thermic process.
- 2.—Ores of high sulphur content can be made into pig iron containing only a few thousandths of sulphur.
- 3.—The silicon content can be varied as required for the class of pig to be produced.



An Exhibit of Two-thirds of the Pig-iron made by the Electro-thermic Process at Sault Ste. Marie, Ont.

where coke might be cheaper than at present quoted in Ontario and Quebec.

Electric Furnace Inexpensive.

"A further advantage of the electric process is that the units employed are comparatively small and cheap of construction. A unit of 1,500 h.p. is perhaps the largest that under present circumstances should be constructed. Such a unit would have an output of 18 tons per day and corresponds in size to about the larger Swedish charcoal blast furnace. With the present advance, which has been made in the transference of electric energy, batteries of electric furnaces could be set up at various iron ore deposits which could be fed with electric energy from some centrally located water power, thus affecting a saving of the transportation costs of the ore from the mine to the furnace.

4.—Charcoal, which can be cheaply produced from mill refuse or wood, which could not otherwise be utilized, and peat coke made from peat, of which there are abundant deposits in Ontario and Quebec, can be substituted for coke without being briquetted with the ore.

5.—A ferro-nickel pig can be produced practically free from sulphur and of fine quality from roasted nickel-ferro-pyrrhotite.

6.—Pyrite cinders, resulting from the roasting of pyrite in the manufacture of sulphuric acid, and which at present constitute a waste product, can be smelted into pig iron by the electric process.

7.—Titaniferous iron ores containing up to 5 per cent. can be successfully treated by the electro-thermic process.

"The last conclusion is based upon an experiment made with an ore containing 35 per cent. of titaniferous acid, yield-