

It should be remarked that the concentrates were obtained by a single passage through the separator. Doubtless even better results could be obtained from finer grinding, and re-passing through the separator.

COST OF PLANT.

It is impossible to give anything but bare approximations as to cost of plant, which varies considerably with the local situation and conditions. The figures quoted are based upon cost of materials, and cost of erection, in the United States:

Concentrating plant for 400-500 tons of crude ore per day	\$45,000
Briquetting plant for 200 tons of concentrates in 24 hours	65,000
	\$110,000

For 100 tons of concentrate per day these figures would be about \$27,000 and \$39,000 respectively, a total of \$66,000.

COST OF CONCENTRATING.

The cost of concentrating will naturally vary with the character of the ore treated and the amount of iron contained in same. Assuming the treatment of an average magnetic iron ore, containing 40 per cent. iron, and the production of a concentrate carrying about 63 per cent. iron, the cost of concentrating varies from 30 to 45 cents per ton of concentrates. These figures refer to the mechanical treatment only, and exclude the cost of ore.

COST OF BRIQUETTING.

The cost of briquetting is also an item varying with local conditions. A briquetting plant of 200 tons daily capacity would consist of four to seven furnaces, depending upon the ore, and to a large extent on the amount of sulphur to be removed. The cost per ton for briquetting can be taken, under normal conditions, as varying between 45 and 85 cents per ton.

At a small plant consisting of one furnace, producing 25 to 30 tons per day, the actual cost, including labor, coal, rent and taxes, but exclusive of depreciation and royalty, amounts to 85 cents. This plant is working on pyrites residues, and owing to its small size and nature of the work, the cost is high.

On the other hand, at a typical plant in Sweden, turning out 120 tons of briquettes daily, the cost of briquetting amounts to 77 cents per ton. At one of the Swedish plants of recent construction the cost has been reduced to 67 cents per ton.

Recently the briquetting furnace has been simplified and improved so as to materially decrease the cost of installation, and at the same time to lower the cost of briquetting.

TREATMENT OF CANADIAN ORES.

The present situation in Canada, and particularly in the Province of Ontario, is similar to that in the Scandinavian countries, in many ways. Not over blessed with ready fuel, and with iron ores that in many instances require concentration, yet it is well known that certain qualities of iron (Swedish pig, for example) are produced, which bring a premium on the market. There is no reason why Canada should not largely augment its production of high-grade pig iron, and have as great a demand for it as for the Swedish article.

There are many bodies of magnetic iron ore in Ontario, running from 35 to 50 per cent. iron, that would

be so improved by proper treatment as to produce premium ores, for which there is now and probably will continue to be a brisk demand.

For ores that demand fine grinding to recover an economical percentage of iron content, the Gröndad briquette affords a means of converting unsalable ores into an article that will actually bring a premium, thus helping to pay for the cost of treatment. Only recently a blast furnace manager told me he would be glad to get 200 tons a day of such briquettes. Gröndal briquettes are now being shipped in considerable quantities from Sweden to Great Britain, where they command an instant market at prices above the average.

ELECTRIC-THERMIC PROCESSES.

Another feature certain to be of considerable economic value to Canada is the application of electro-thermic processes for producing high-grade pig iron and steel. Broadly speaking, the use of sufficient electrical energy to produce one ton of pig iron in the electric furnace means the displacement of about 1,600 pounds of fuel. Coal once used is gone forever, while water powers maintain themselves by a natural process, a fact of great economic importance to Canada. The fortunate existence practically side by side, of iron mines and extensive water powers, produce conditions very favorable to the electro-thermic process. The writer believes the Government would do well to foster the development of that branch of metallurgy as much as possible, to enable the country to realize on its natural and unique resources.

Many of the ores could doubtless be used direct, others would require concentration, and still others would have to be briquetted, but the economy of producing finished material wherever possible "on the spot" is obvious. Science and Art have now placed in the hands of those who will, means of utilizing these resources, and thus adding to the nation's wealth.

The monazite produced in the United States in 1906 all came from North and South Carolina. The output of crude sand amounted to approximately 2,000,000 pounds, averaging about 30 per cent. monazite. The grade of this sand was so variable and the prices realized on different lots were so irregular that cleaned sand has been used as an estimate of the quantity of monazite produced, an additional reason for so doing being furnished by the fact that the greater part of the crude material is cleaned by local mills before shipment, and the grade brought up to 80 per cent. or more of monazite. On a basis of 80 per cent. production, North Carolina produced 697,275 pounds of the mineral, valued at \$125,510; and South Carolina 148,900 pounds, valued at \$26,802; the total for the United States amounted to 846,175 pounds, valued at \$152,312.

The production for 1905 amounted to 1,352,418 pounds, valued at \$163,408. This amount represented in part crude and in part cleaned sand—a fact that explains the increase in quantity without corresponding increase in value.

The condition of the monazite market in the United States in 1906 was fairly strong, despite the fact that the price of thorium nitrate, which is manufactured principally from monazite, was reduced nearly one-half early in the year by the German thorium combine. Though made with the intention of killing all competition, this cut has resulted only in the temporary closing down or the bankruptcy of a few of the smaller companies.