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British Columbia and Iron and Steel Industry

Dr. Stansfield's Report Shows Electro-Smelting Process, With Pre-concentration of Ore, Hold Out Most Promise for Prompt Establishment of Industry.

Dr. Alfred Stansfield, Professor of Metallurgy in McGill University, under the order of the Provincial Government has been investigating the possibilities of the establishment of an iron and steel industry in British Columbia. He has recently presented his report to the Hon. William Sloan, Minister of Mines, which has been made public.

Dr. Stansfield has made a comprehensive report of the materials at hand, which report is a very interesting and valuable basis for the consideration of this problem which is fraught with such large possibilities for provincial development. His conclusions are very carefully worked out, and are deserving of the closest scrutiny and study. Without having had an opportunity of investigating the iron ore resources of the Province, he accepts the existing reports as to the amount, the sources of iron ore occurrence in the Province, and on that basis analyzes the ores with a view to determining their metallurgical treatment.

At the beginning of his summary of conclusions he states that the iron ore of the Province, being of a general magnetite variety, are unsuitable without mixing for blast furnace treatment. Since these magnetites would have to be mixed with hematites, which are not known as yet to exist in commercial quantities in the Province, he decides not to take into consideration the matter of importation of these ores from elsewhere, with a view to the establishment of blast furnace treatment. In consequence he devotes his entire attention to the matter of the electrical furnace process, with consideration of the costs, materials, labor, markets, etc.

Dr. Stansfield takes as his premise the acknowledged fact of the existing iron ore resources, that there is available 50,000 tons per annum of iron ore possessing from 50 to 55 per cent. of iron content, and is practically free from phosphorous and titanium, and is well within the Bessimer limit of sulphur content. He estimates that this ore could be delivered at a suitable smelter site at a cost, under present conditions, of \$4.00 per net ton.

Since the electric process is the only process that holds out any hope of developing the iron industry, this process is determined by the quantity and cheapness of electric power. The available amount of power, Dr. Stansfield is assured, is large, and can be produced at a cost of \$10 per k.w. year. He, however, takes into consideration the price of \$15 per k.w. year as one that will admit of economic handling of the electric furnace process. However, the large power companies now operating will not make a price less than one-half cent per k.w. hour, which causes considerable concern as to immediate steps to be taken for the erection of an electric furnace.

Dr. Stansfield points out that charcoal in the electric furnace process for the treatment of the ore, is available in large quantities at cheap prices. He estimates the net cost of charcoal, using Douglas fir waste, delivered at the smelter, at from \$6 to \$8 per ton, which, in the treatment of the ore, would cost from \$2.40 to \$4.00 per ton of pig iron produced. He states that charcoal is superior to coke on account of its higher carbon content, and, on account of its cheapness, would considerably aid the electric furnace process.

Dr. Stansfield regards the labor situation as fairly good, and could be adequately handled when the demand arose. He states that the labor cost for the production of pig iron would be from \$4 to \$5 per ton. The location of the plant must be established with low transmission loss, and at the same time be near the larger markets. He thinks that, under existing conditions, there is a

consumption of iron and steel of between 20 and 30 tons per day, which would grow as the industry developed. Existing prices for foundry pig vary between \$60 and \$80 per long ton, as against the pre-war price of \$25 per ton. He presumes that foundry iron will not fall below \$35 per ton in the location of Vancouver for the next few years.

The Professor reviews the existing type of electric furnaces and points out their adaptability to British Columbian conditions. The establishment of a Swedish furnace plant, consisting of three electric furnaces of 3,000 k.w. each, producing a total of about 80 tons pig iron daily, would cost from \$350,000 to \$400,000 to erect in British Columbia. With the establishment of such a plant, and

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