factor in determining the possibility of the electrical smelting of iron ores. It is by no means easy to obtain satisfactory figures. One Canadian writer states that an electrical horse power can be produced hydraulically in America for 0.05 cents per hour, while the small consumers of electric light in Montreal pay 10½ cents for the same amount, a figure which is 200 times as great as the other.

The author had obtained a number of figures for the cost of production and the selling price of electrical power, and these placed the cost of producing an electrical horse power under very favourable conditions from water power as 0.13 cents per hour while the price at which it might be bought would be 0.16 or 0.17 cents, and in exceptionally favourable cases even lower figures might be obtained, it being understood that very large outputs are considered, that these are to be employed near the source of power and that the power is to be used continuously 24 hours a day and 365 days a year.

The problem may be considered in two ways, either as a simple iron smelting proposition in which electric power is purchased with the other supplies, or as a scheme for the utilization of a water power in which the iron smelting is merely considered as a means to that end, and the price charged for electrical power would probably be different in these two cases.

Let us suppose that the iron smelter purchases power at 0.15 cents per E.H.P. hour or 0.2 cents per kilowatt hour.

If 2,500 kilowatt hours are required for the production of 1 metric ton of pig iron the cost for electrical energy would be $5.00.

Against the cost of the electrical power may be set the cost of the fuel that is saved by using electrical heat. About 0.6 of a ton of coke is saved per ton of iron produced and this at $2.50 a ton * would amount to $1.50 per ton of iron.

Dr. Goldschmidt considers that the carbon electrodes used in the electric furnace will cost about 70 cents per ton of iron, and against this figure should be set the saving effected by the absence of blowing engines and hot blast stoves.

We may, therefore, consider that the prices of fuel and of electrical power are the main factors to be considered as determining the relative cost of the two methods of smelting iron ores. It is quite clear that electrical smelting of iron ores cannot compete with the blast furnace using coke at $2.50 a ton, even in places where very cheap water power is available, but if the price of coke were $8.00 instead of $2.50, the saving of coke and blast would about equal the cost of the electrical heat, so that in localities where furnace coke cost upwards of $8.00 a ton and where cheap

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* Mineral Industry, vol. XI., page 135, average price at ovens in the United States during 1902.