

Drilling has shown that it contains from 150,000,000 to 200,000,000 tons of ore averaging 35 p.c. titanium dioxide and 40 p.c. iron. A large part of the ore comprises a hill and thus can be mined by quarrying, at a minimum of expense. A railway, 27 miles in length from Havre St. Pierre, is under construction and preparations for a suitable ore loading dock are under way. Shipments will be at the rate of about 3,000 tons a day during the shipping season, to supply the metallurgical plant at Sorel in its first stage of development.

The plant under construction at Sorel, on the St. Lawrence River 40 miles below Montreal, will use a new smelting process worked out by the Kennecott Copper Corporation in collaboration with the New Jersey Zinc Company. These two companies have incorporated a subsidiary, Quebec Iron and Titanium Corporation, to operate the smelter. The ilmenite will be treated in large electric furnaces in which the iron oxide will be reduced to metallic iron and separated as pig iron, and the titanium will be concentrated in the residue which carries 70 p.c. titanium dioxide.

A contract has been made with Shawinigan Water and Power Company for 150,000 h.p., to be provided from La Trenche power plant, now under construction on the St. Maurice River, with delivery of power commencing in 1951. The initial smelting plant will treat 1,500 tons of ore a day, which will produce 500 tons of iron and 700 tons of titanium dioxide concentrate. This amount of the concentrate is in proportion to the present market for refined titanium dioxide. The smelting plant at Sorel will be enlarged with the growth of the market and additional power will be drawn as required from the Beauharnois power plant and possibly from Lachine as necessity arises.

Titanium white is likely to be eclipsed in importance in due course by titanium metal. Until three years ago the metal was virtually unknown, attempts until then to reduce the metal from its ores having given impure alloys which were brittle and of no commercial use. The pure metal, it has now been discovered, has properties that are likely to give it an important place in industry. It is little over one-half the weight of iron, and is as strong as steel.

Titanium metal melts at about 1,800 degrees Centigrade, can be rolled, drawn and forged, and has a specific gravity of 4.5 (iron is 7.8). It has excellent corrosion resistance, except for certain acids, and shows no tarnish after thirty days' exposure to salt spray. The tensile strength of the annealed metal is 82,000 lb. per square inch. Cold-worked to 50 p.c. reduction, the tensile strength is 126,000 lb. per square inch.

Up to the present only a few tons of the metal are in existence, all of which is being used for experimental work. The processes by which the metal is made are still far from perfect and the cost per pound is still rather high. The analogy with other new metals such as magnesium and aluminum, suggests that the cost will be reduced rapidly as the processes are improved, and that titanium will soon be a commercial metal, in common use.

Manufacture of titanium metal is under way in two pilot plants in the United States. The method is to change the refined titanium dioxide to titanium tetrachloride and to reduce the latter to titanium metal by the use of metallic magnesium. A Canadian company has evolved a method of making the metal from the oxide. The peculiar and valuable properties of the metal suggest important uses when the cost of producing it has been reduced sufficiently.