

WOOD PULP ~ ~ DEPARTMENT

THE SAULT STE. MARIE PULP MILLS.

In a previous issue we outlined the steps which led to the establishment of the great pulp mills of the Sault Ste. Marie Pulp and Paper Company at Sault Ste. Marie, Ont. In this number we present illustrations of the mills, and give some particulars of the extensive industries which have been established.

Two of the mills, shown in the first illustration, manufacture mechanical pulp. Their cost of construction was in the neighborhood of \$2,000,000, and they give employment to 500 men, while 400 others are engaged in the forest getting out spruce logs. The mills are operated day and night and the value of the annual production is about \$1,000,000. No. 1 mill is 600 feet long and 80 feet wide, and No. 2 800 x 100 feet. It is estimated that the power required to run the mills is 14,000 horse power. The company have established a reserve supply of raw material and of the finished product, in order to meet the possible contingency of an accident entailing a delay in operation. This consists of about 30,000 cords of spruce logs and about 1,000 tons of wood pulp.

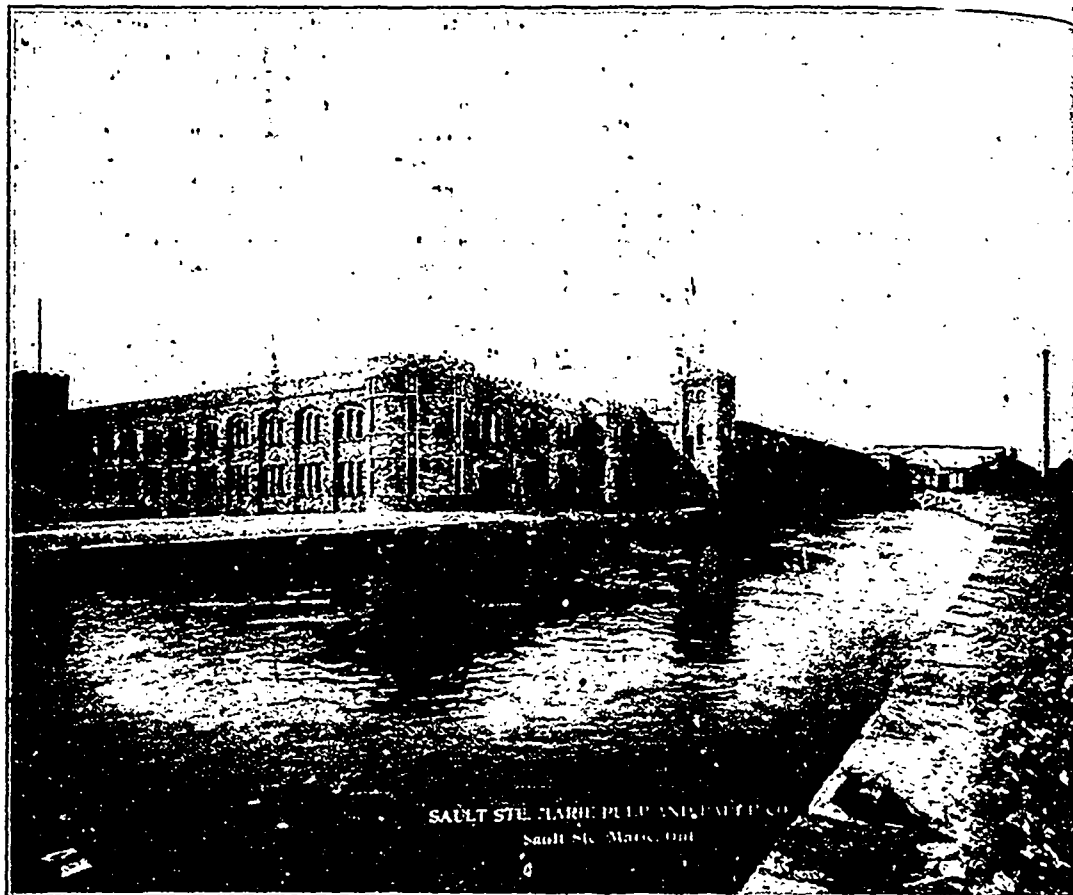
These mills being completed, the manufacture of sulphite pulp next engaged the attention of the manager, Mr. F. H. Clergue. The great drawback to the economical manufacture of sulphite pulp was the high price of sulphur, the chief source of supply being the Sicily mines. Mr. Clergue, however, set about to discover a means of getting a supply of sulphur. He went to Sudbury and noticed that sulphuric acid gas to the value of \$2,000 a day was being allowed to escape during the process of roasting nickel ore, large quantities of which exist in the Sudbury district.

The outcome was that Mr. Clergue discovered a method to get sulphurous acid gas out of the pyrrhotite, and the erection of a sulphite mill was immediately decided upon, and is now nearing completion. It is 170 feet long, 68 feet wide, and 110 feet high. At the southern end there is an annex for the acid department 46 by 42 feet, surmounted by a stately tower. The height of this tower from the ground is 130 feet. The sulphite mill has been built of structural steel and native stone. It will turn out sufficient chemical pulp to treat the product of the two wood pulp mills, and in addition will produce daily 75 tons of clear, bleached sulphite fibre. The latter brings \$75 a ton, and the annual output represents a value of over \$2,000,000. The same number of hands will be given employment as in the ground wood pulp mills, viz., 500.

Two huge digesters, 54 feet in height by 17 feet in diameter, and built of 1 1/4 inch steel, are being placed in the sulphite building. The foundations of masonry under each will be capable of sustaining 750 tons, and will rest on solid rock.

The question of a supply of sulphur having been disposed of, Mr. Clergue turned his attention to other discoveries. It was found that the residue left after the sul-

phur had been removed from the ore contained nickel and iron in a perfect state of harmony, and when fused into a metal it produced an alloy of nickel steel. This discovery resulted in the construction of reduction works and a ferro-nickel plant. The works consist of a building 104x54 feet, containing an ore crushing plant with a capacity of 500 tons per day, and a second building 158x88 feet containing the roasters.



PULP MILLS NOS. 1 AND 2.

To remove the copper from the nickeliferous pyrrhotite, alkali works were established. They are equipped with 120 electrical machines for treating salt by the Rhodin process. Sodium is used for separating the copper from the nickel, but there is the chlorine still to be considered. This is converted by the aid of chlorine gas and lime into bleaching powder, a substance used for bleaching woollens, cloths and fabrics. The chlorine gas, instead of being allowed to escape, is forced by a

glass pump into limewater, which is then used for bleaching the sulphite pulp.

So large a quantity of nickel ore is required to be the reduction works that the sulphite mill is enabled to utilize it all, and a surplus of sulphurous fumes are therefore, undisposed of. To allow this to escape was a great loss, and so a means was devised of converting the gas into liquid sulphuric acid, which is in great demand for the purposes of ore refining, and for use in the arts. It is proposed to manufacture the acid and deliver it in tanks to the trade for use in making sulphite pulp 50 per cent. less than sulphur can be obtained for Sicily.

The nickel ore or pyrrhotite having been freed from sulphur, will be delivered to 100 electrical furnaces of 10 tons a day, where it will be turned out in the form of ferro-nickel pig. The intention is then to refine the nickel steel. There are a splendid foundry, machine

shop, pattern shop, carpenter shop and laboratory. These are equipped with plant and appliances of the most modern character. The foundry building is 160 feet in length by 100 feet in width, but a new foundry building 200x75 feet is in course of erection. The machine shop is 160x80 feet, operated by electric power.

Extensive works are still contemplated. At Moos Point, three miles west of the present group of industries, will be located huge blast furnaces and works for the manufacture of Bessemer steel. In these works over 5,000 operators will be given constant employment.

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