THE ATIKOKEN IRON COMPANY.

L. B. ORCHARD.

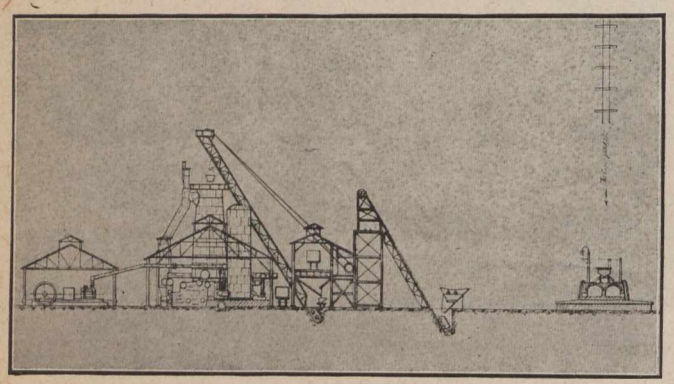
Cuts made from photos loaned by C. N. Ry. Co.

The plant of the Atikoken Iron Company is situated at Port Arthur, on the north shore of Lake Superior. The site selected was one adjacent to the Canadian Northern coal docks.

Dry land was hard to procure, and this was rather a setback to the company in starting operations. The surrounding district is low and swampy, largely muskeg. So the plant was built on a sandbar on the shore line of the lake. In order to procure a good foundation, piles were driven to a depth of about 20 feet to a gravel and clay bottom, and were cut off under water. A concrete filling was then placed over the piles.

The whole plant covers an area of about 2,500 feet by 600 feet, including the dock. It was designed by Mr. Frank C. Roberts, of Philadelphia. The slag from the blast furnace, after having been granulated, was exclusively used for the filling in and the building up of the yards. The main yard and furnace track was built on piles and afterwards filled in in this manner.

The plant is modern in every respect, and no money has been spared to make the industry the most successful the province has seen.



Section showing Stock-Shed, Furnace, Roaster and Ovens.

Furnace.—This is 75 feet high and has a 14 foot bosh and a hearth 8 1-2 feet in diameter. The capacity of the furnace is 100 tons per 24 hours; but a time last summer, when everything was running smoothly, the output reached 130 tons per day. All parts of the furnace plant, except the boilers and blowing engines, have been designed to accommodate a lining with a 17 foot bosh, which would raise the capacity to 200 tons. Hence with very few alterations the capacity of the furnace could be doubled. The furnace is fitted with two cinder notches at opposite sides, one being used for hot cinders, the other for granulating purposes, for which a special plant has been added. This has also the distinct advantage that should one cinder notch be lost there is the other to fall back upon.

The cast house is 160 feet by 55 feet, and the bed is raised about 10 feet to the level of the furnace; the iron is cast four times in the 24 hours, at 9 and 3 respectively. The bulk of the iron made is No. 1 foundry, with a good open fracture and having an average analysis as follows: Silicon 3.76, sulphur 0.005, phosphorus 0.20, manganese 0.15 per cent. respectively.

Stoves.—The furnace is connected with three Roberts 2-pass hot blast stoves, 18 feet by 75 feet respectively, and are all fitted with valves of the latest design. Each stove has a heating surface of 18,500 square feet, which raises the blast up to a temperature of about 1,250 degrees F. The three stoves are used in rotation, changing every hour, so that when stove No. 1 is on blast, stoves 2 and 3 are on gas, or when 2 is on blast 1 and 3 will be on gas, and so on. Thus each stove has two hours on gas consecutively. Owing to the fact that the furnace is equipped with a Roberts-Whistler dust catcher, the gas conveyed to the stoves is practically free from dust, so saving many unnecessary close downs for cleaning.

The Blowing Engines.—These were built by the Southwark Foundry & Machine Company of Philadelphia. There are two engines, which are horizontal disconnected compound of 600 horse-power each, with steam cylinders 32 by 54 and 48 by 54 inches respectively. These engines are fitted with air tubs 66 inches by 58 inches, and are so arranged that they take their air supply from outside the engine room. This is a great advantage, as it keeps the air free from steam, and also keeps the blowing room heated in winter time. Again, the air outside being colder, necessarily contains less moisture, hence the air blown to the furnace is much drier than would otherwise be the case. The total volume of air blown is nearly 30,000 cubic feet per minute from both engines.

The light and power for the plant is supplied by two 75 kilowatt dynamos connected to two Robb-Armstrong engines. Adjoining the engine room is the pump house, where two 2,500 gallon pumps and a jet condenser are installed, also two boiler feed pumps, all manufactured by the Canada Foundry Company of Toronto. The main blowing engines and large pumps are operated condensing. The dynamos and feed pumps exhaust into heater.

The boiler plant consists of four 225 horse-power Atlas water tube boilers, also built by the Canada Foundry Company. These boilers are specially set to use the water gases from the furnace, thus saving a high consumption of coal. Just sufficient coal is used to keep the gases ignited. For the four boilers only about 20 tons of coal are used per month.

Roaster.—On account of the iron ore used in the furnace containing such a high percentage of sulphur, it has to be roasted before being charged into the furnace. For this purpose a Roberts roaster has been added to the plant. This roaster is charged mechanically from the top and has a capacity of 400 tons per 24 hours; it is divided into sixteen sections of about 25 tons capacity each. Each section has a separate combustion and chimney chamber. The ore passes through the roaster by gravity and is heated to a temperature of about 1,500 degrees F. by a mixture of air and gas from the blast furnace, which is passed through it. The ore remains in the roaster about 24 hours. In its natural state the ore contains anywhere from 2 to 5 per cent. spulphur; but after roasting the sulphur is reduced to about 0.5 to 0.8 per cent. The mechanical draught for the roaster is maintained by two Sturtevant 12 foot exhaust fans.

The arrangements for the handling of the stock are extremely neat and satisfactory, one man being able to handle all that is required for the charging of the furnace. The stock is stored in a series of iron hopper bins, or pockets. These are raised on a steel structure to allow