

The Midland Blast Furnace.

On Dec. 18, on the invitation of the Canada Iron Furnace Co., a party of nearly a hundred visited Midland, Ont., to attend the opening of the Co.'s blast furnace there. Several of the directors & a number of others left Montreal the night before, arriving at Toronto in the morning, where they were joined by the other guests, the whole party leaving Toronto at 9 a.m. by special train. A stop was made at Allandale for luncheon, after which a rapid run was made to Midland, which was en fete for the occasion. The special was run round the harbor on the C.I.F. Co.'s spur line to the furnace, where a run was witnessed, after the Premier of Ontario had christened the furnace & the Mayor of Midland had started the tapping. After seeing the run & the making of pig, the guests made a general tour of the works & a number of speeches were delivered. On the return journey another stop was made at Allandale for dinner, Toronto being reached about 9 p.m. The directorate was represented by G. E. & T. J. Drummond, of Montreal, who were indefatigable in their attentions to their guests. A very enjoyable feature of the outing was the presence of their brother, Dr. Drummond, author of "The Habitant," who was very heartily welcomed. Arthur White, Division Freight Agent of the G.T.R. at Toronto, assisted very materially in the arrangements.

The furnace proper is a cylinder or shell of steel set up vertically on 8 cast-iron columns. Its height is 64 ft., & its diameter at the bosh 13 ft. Its capacity per day of 24 hours is about 150 gross tons of iron. The lower part of the furnace, inside of the supporting columns, is protected by a water jacket, through which flows thousands of gallons of water per day for the purpose of cooling the outside of

the brick, & counteracting the intense heat from the crucible or inside.

Certain qualities & quantities of fuel, iron ore, & limestone are selected & decided, & then the furnace is charged. First, 3,600 lbs. of fuel is hoisted up on the steam elevator, where the top fillers or men dump it into the stopper, which has a bell or inserted valve at its bottom. When the entire charge of fuel is dumped into the hopper the valve or bell is lowered by means of steam, & the whole charge allowed to fall into the furnace. This practically constitutes one layer of fuel in the furnace, the inside of which is entirely built up with fire-brick, & shaped somewhat like an ordinary lamp chimney, the lower part being known as the "crucible," the wide or belly part the "bosh," & above this the "stack." Then a charge, consisting of 5,000 or 6,000 lbs. of ore & limestone is hoisted & dumped into the furnace on top of the fuel. Then another charge of fuel & then a charge of ore & limestone, & alternately fuel & ore & limestone continuously as long as the furnace runs, which, in many cases, is from 2 to 6 years. As fast as the stock in the furnace is consumed below it feeds down from the top, where the lever is shown by a try-rod, by the use of which the top-filler or attendant knows when to put in a fresh charge. This covers the top work, but below the work is entirely different.

At the bottom 8 tuyeres, or blow-pipes, are inserted at the crucible, & about 6 ft. from the hearth or bottom. The 8 tuyeres are inserted at regular distances around the crucible, & through them is forced the wind or blast, which causes combustion & melts the ores. Peep-holes protected by mica enable the furnaceman to tell when the slag or metal has reached a proper height in the crucible, & at the proper time he opens a small notch at the bottom of the furnace crucible & allows the

molten iron to pour out. It runs through an open sand trough down the centre of the cast-house, & is then conveyed into side beds through troughs or gutters in the sand, which are known as sows. Opening from the side of this sow are some 20 or 25 open moulds, which are known as pigs, & into these the molten iron is conveyed by means of the sow-channel. Here the metal cools, after which it is broken & carried out. It is then a commercial article known as pig iron. After the entire contents of the furnace crucible is drawn off the notch is plugged with clay & the furnace continues consuming its stock & making iron. Four casts are made each day, at regular intervals of 6 hours, & the day's output runs from 100 to 150 tons of iron, which necessitates the handling & consumption of about 150 tons of fuel, & 250 to 300 tons of ore & limestone, the latter being necessary for fluxing or cleansing the iron.

The two blowing engines are of the vertical type, each with 34-in. steam cylinders & 48-in. stroke. They are massive & powerfully built, & erected on heavy concrete foundations capped with granite. Around the upper portion runs a substantial iron gallery, or platform, which makes all upper parts of easy & safe access. Each engine is capable of blowing 10,000 cubic feet of air per minute.

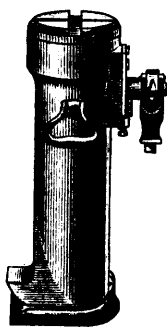
The steam pump equipment consists of two duplex outside packing pumps, 10-in. x 10-in. x 18-in. These are used for furnace & stove circulation, & also for fire purposes. There is also a duplex outside packing steam pump, size 8-in. x 5-ft. x 6-in., which is used for boiler feed purposes. All pumps are erected on a heavy concrete foundation, capped with blocks of granite.

There are 8 steam boilers, flue type, 52-in. in diameter & 25-ft. long, each having two 18-in. flues. The shells are double riveted,

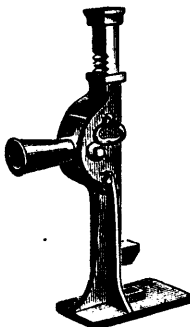
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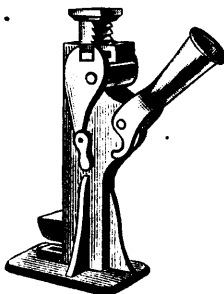
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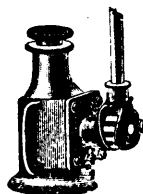
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