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THE LILLESHELL IRONWORKS, SHROPSHIRE

Having been permitted by Mr. T. E. Horton, the managing partner at Lilleshall, to make an examination of the works and believing that a notice of some improvements in iron-making and of extensive mines worked by the Lilleshall Company will be interesting to your readers, I submit the following notes:-

The Company has nine blast furnaces, namely five at the Lodge and four at Priorslee. Of those at the Lodge, four have recently been raised from 50 ft. to 71 ft. in height and are now in blast and the fifth is in course of alternation. The average rate of the four in 1869 was 131 tons per furnace per week of cold blast pig iron. The ironstone used is all obtained from the Company's own mines and consists of eight varieties, found interspersed with the coal seams. Coke is used solely in these furnaces, half of it is made from coal built in open fires, the other half is cooked in ovens wherein washed slack is utilized. A machine for this purpose washes slack sufficient for the supply of 50 ovens. These are 11 feet round with flues at the bottom and sides. The coke is withdrawn by hand and watered as it is drawn out by perforated pipes placed over the doors. One chimney takes off the gases from each four ovens. The top coal, raddle and clad coals are used for coking and are highly valued for iron-making, the clad coal more particularly. Three calcining kilns have lately been erected at the back of the furnaces; these are 40 feet high, 26 feet in diameter, cased with iron plates. A small engine raises the stone to the top of them by a small incline. There are a pair of blast beam engines, coupled together, built by the Lilleshall Company. The steam cylinders are 40 inches, blowing cylinders 86 inches diameter, 9 ½ foot stroke. The steam pressure is 35 lbs. cut off at one-fourth of the stroke and afterwards condensed. There are six boilers, two tubes to each, in connection with this engine; they are fired with slack. Eight pairs of this type of engines have been made at Lilleshall and sent to various parts of England and Scotland. The materials are raised from the old level to the new level at the top of the furnaces, a height of 21 feet, by means of two pneumatic lifts, the saving of fuel in the blast furnace by increasing the height and other improvements, has been from 66 cwt. to 53 ½ cwt. of coal at present used per ton of pig iron made, or a saving of 12cwt. of coal. The 53 ½ cwt. of coal represents about 25 cwt. of coke used per ton of pig iron produced.

At Priorslee there are three hot blast furnaces and one cold blast. These will shortly all be in operation; one is out temporarily for repairs. These furnaces - erected in 1850 - are 60 feet high, 15 feet at the bosh, 10 feet at the top and 6 feet in the hearth. The make of pig iron is 230 tons per week each with hot blast and 140 tons with cold blast. Coke made in open fires is used in the cold blast furnace. Thirty per cent coal and seventy per cent coke is used in the hot blast furnaces. The greater proportion of the coke is made in ovens. There are forty two round ovens built with flues all communicating with one tall chimney. The washed slack is utilized for making coke. The native ores and haematite are used for smelting. There are two hot blast stoves to each furnace; forty-two double pipes in each stove. Temperature of blast at tuyeres is 800 degrees; pressure of blast 3½ lbs.; five tuyeres for hot blast and three dry tuyeres for cold blast furnace. The materials are raised from the bottom to the top of the furnaces by a steam engine and a vertical lift, with two carriages. The blast is supplied by two beam condensing engines, coupled; steam cylinders 36 inch, blowing engines 76 inch; 8 ft. stroke; 45 lbs. steam pressure, cut off at one-fourth of the stroke; beams are extended by horseheads, connecting rods from them to the flywheel shaft. There are seven double-tubed boilers for these engines. The steam is raised wholly by the waste gas taken from one furnace, by means of the Darby bell. It is intended further to utilise the waste gas for heating the stoves.

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