

ART. XXIV.—*The Old Blast Furnace at Duddon Bridge.*

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Read at Coniston, September 16th, 1896.

OF the many tourists who now visit the beautiful Duddon Valley, but few of them are aware that ruins of Iron-works of a most interesting character exist at Duddon Bridge, on the Cumberland side of Wordsworth's "cerulean Duddon." Here in a secluded corner, hid by vast overhanging woods, a blast furnace was built early in the seventeenth century by an ironmaster named Jackson, who also had works of a similar kind in Scotland. The obvious reason for selecting such a position was the abundance of charcoal produced from the extensive coppice woods around it, and also to take advantage of the water power of the Duddon, by which the primitive "blowing" machinery was driven.

Bearing in mind that the objects of this Society are far removed from such mundane operations as iron-making, I will exclude from this paper but the merest technical details, but I must observe that as between the "Bloomeries," to which our attention is directed at this meeting, and the modern blast furnace of to-day, the old furnace at Duddon Bridge is one of the most interesting connecting links extant.

The works consist of one blast furnace, 28 feet 6 inches high from the charging floor to the hearth. The diameter is 2 feet 6 inches at the top, 9 feet at the bosh,* and I should estimate the diameter of the hearth at 3 feet. The furnace was, of course, lined with fire brick, but the struc-

* "Bosh, boshes." According to Kennett MS. Lansd. 1033, "the bottom of the furnace in which they melt their iron ore, the sides of which furnace descend obliquely like the hopper of a mill." Halliwell's Dictionary of Archaic Words.

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ture itself, square in outward shape, is built, as are all the other buildings, of the rough, strong, native rock. The charcoal store-houses are by far the most extensive part of the works, as the quantity of charcoal made in any single year was insufficient to carry on the smelting operation regularly, and the furnace had periodically to remain idle until a sufficient supply was stored in these large buildings.

In 1790 a lease was granted by John Cookson-Gilpin Sawrey, of Broughton Tower, to Joseph Latham, of Goat-field, in Argyllshire, and Richard Latham, of Broughton-in-Furness, ironmasters, empowering them to make a weir across the river Duddon, but as the works had been carried on long before that date, water power from the Duddon must have been somehow obtained. Late in the last, or early in the present century, the Duddon furnace was acquired and worked by Messrs. Harrison, Ainslie, and Co., and by them carried on until about 1866, or perhaps a little later, since which time it has fallen into disuse. The hematite iron produced was "cold blast" of the highest quality—ranking with Swedish iron.

I exhibit at this meeting a "pig" of this iron, branded **D** 1781, found by me at Borwick Rails, Millom, in 1866, doing duty as a lintel or bearer for an overhanging chimney stack on an old farm-house there. The iron made at the Duddon furnace was shipped at Borwick Rails harbour, which will account for this stray "pig" of iron. It may be observed that the ancient Millom harbour of Borwick Rails is again at the present day the place of export for the millions of tons of ore from the Hodbarrow mines, and the pig iron from the Millom blast furnaces.