

Sect. II. *Millstone-Grit and Shale of the Penine Chain.* 387

We begin as before with the northern extremity of the chain.

In this quarter Mr. Winch has classed the beds of which we are now about to treat together with the subjacent strata of carboniferous limestone, under one order of rocks, to which he bestows the common name of Lead measures. But the distinction which is here proposed, is imperatively required by the structure of the southern parts of the chain in Derbyshire: and even in the northern, the following considerations will evince its propriety. The sections of the workings at Hely, Aldstone Moor, and Dufton, as given by that gentleman (which taken in succession afford nearly a complete view of the series of beds occurring within this district,) exhibit a total depth of about 450 fathoms. Of these, the beds constituting the upper portion to the depth of 150 fathoms (in which the millstone-grit occurs) *contain only two thin beds of limestone, each but one fathom in thickness, but in the lower portion 19 beds of limestone occur, many of very considerable thickness, amounting together to one-third of the total depth of this portion.* So that the lower portion may be considered as distinctly characterised by the abundance, and the upper bed by the almost total absence of limestone. Workable seams of coal also occasionally occur in the upper portion, but none in the lower, although some faint traces of the same mineral may even there be traced.

Guided by these principles, we select for our present observation only the upper portion of the beds comprised in the sections published by Mr. Winch; those namely, which occur in the workings at Hely field on the Derwent, and Aldstone Moor, above the thick calcareous bed called the Tumblers, and great Limestone.\*

\* *Section of the Lead-mine strata at Hely Field on the river Derwent.*

	Fs.	Y.	Ft.	In.
Slate sill .....	2	1	—	—
Plate .....	3	1	—	—
Different Girdle beds .....	2	—	—	—
Plate .....	2	1	—	—
Freestone (fine-grained sandstone)...	7	—	—	—
Coarse hazle .....	1	1	—	—
Plate and blue whin .....	1	—	—	—
Plate and Grey beds .....	—	—	2	—
Hard stone and Whin .....	1	—	2	—
Plate and Whin .....	1	1	2	—
Plate .....	2	1	—	—
Millstone grit .....	5	—	—	—
Plate .....	4	1	—	—
Hard hazle .....	2	1	—	—
Grey beds. (Thin layers of slate-clay and sandstone alternating) .....	1	—	—	—
Freestone .....	7	—	—	—