Marsett Formation

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Marsett Formation (MASA), Carboniferous, Northern England Province

Marsett Formation is part of the Ravenstonedale Group

Name

The formation, locally referred to as the 'basement beds', feldspathic conglomerate, quartz conglomerate, greywacke sandstone, etc., in previous work (see for example Garwood, 1913[1]; Rose and Dunham, 1977[2]; Mitchell, 1978[3]; Pattison, 1990[4]) is named after the hamlet of Marsett in Raydale.

Lithology

The Marsett Formation comprises laterally variable beds of conglomerate, lithic sandstone and mudstone. The sandstone beds are generally cross-bedded and may be in shades of brown, red, grey, green or buff. Over much of the Stainmore Trough, the Marsett Formation comprises red sandstone, green shale and conglomerate. On the Askrigg Block the formation consists of reddish brown and greenish grey sandstone and conglomerate with rare dolostone beds. In north Cumbria, basaltic lavas of the Cockermouth Volcanic Formation occur within the alluvial fan facies of the formation.

Genetic interpretation

In most instances the beds are fluvial in origin, though reworking in shallow marginal marine conditions may have occurred locally.

Stratotype

The type section is from about 406 to 463 m depth in the BGS Raydale Borehole (BGS Registration Number SD98SW/1) (SD 9026 8474) on the Askrigg Block. Localities in the Appleby district include

Shap Abbey (NY 5482 1533) where about 9 m of shaly sandstone and conglomerate occur in a cliff on the River Lowther (see Garwood, 1913[1]), and Holghyll (NY 4290 2730) where a thick succession is accessible in the ravine (see McCormac, 2001, p. 12[5]).

Lower and upper boundaries

The Marsett Formation rests unconformably upon the limestones, mudstones and sandstones of the Pinskey Gill Formation in the Stainmore Trough (Figure 9, Column 16) and on the siltstones and sandstones with thin-bedded and nodular dolostones of the Raydale Dolostone Formation on the Askrigg Block (Figure 9, Column 17; Figure 15, Column 3). In the Furness area the formation is underlain unconformably by unspecified Lower Palaeozoic strata (see Section 6.4.2.1). The formation is contiguous with the overlying marine Tournaisian/Visean succession. This comprises in the Stainmore Trough and on the Askrigg Block the limestones, sandstones and mudstones of the Stone Gill Limestone and Penny Farm Gill formations respectively.

North of the River Lowther in Westmorland the formation is overlain by the dolostones of the Shap Village Limestone Formation (the base of which is marked by beds with algal mats and nodules) (Figure 14, Column 3). Near Orton, east of Shap, in a gully section next to the M6 Motorway (NY 600 075) black marine mudstone beds of the Marsett Formation lie beneath calcareous limestone and siltstone beds of the Stone Gill Limestone Formation (see Pattison, 1990, p. 9; Day, 1992, p. 15[4]; McCormac, 2001, p. 12[5]) (Figure 9, Column 16). On the Alston Block and in north and west Cumbria the conglomerates of the Marsett Formation are, respectively, unconformably and disconformably overlain by the carbonates of the Melmerby Scar Limestone and Frizington Limestone formations, Great Scar Limestone Group (Figure 9, Column 15; Figure 14, Columns 1, 2), though at the northern margin of the Lake District the top of the Marsett Formation conformably underlies the basalt lavas of the Cockermouth Volcanic Formation (Figure 14, Column 2). In the Furness area the formation passes conformably up to grey, red and green marine mudstone and limestone of the Martin Limestone Formation (Figure 9, Column 14) (see Sections 6.4.2.1 and 6.6.19).

Thickness

In most areas the formation is thin. In the Appleby district it is 2–20 m thick. In north and east Cumbria it is typically less than 35 m thick. On the Askrigg Block it is 60 m thick. However, on the northern margin of the Stainmore Trough, at Roman Fell (NY 760 200), beds up to 200 m thick are present. The formation is up to 240 m thick in the Furness area.

Distribution and regional correlation

Present in north, east and west and south Cumbria and throughout north Yorkshire, including the Stainmore Trough and Askrigg Block. In the Kendal area it is suggested that what is presently assigned to the lower part of a local equivalent of the Martin Limestone Formation, Great Scar Limestone Group of *open marine, platform and ramp carbonates facies*, is more typical of the Ravenstonedale Group (see Section 6.6.19).

Age and biostratigraphical characterisation

Miospore assemblages from a number of sites including Cockermouth, Ravenstonedale and Furness (Mitchell, 1978[3]; Holliday et al., 1979[6]; Rose and Dunham, 1977[2]) all indicate a CM Zone, Tournaisian age for the formation. However, the beds pass upwards in unbroken succession into limestone, which may be as young as Holkerian. Biostratigraphy of the Raydale Borehole (see above)

suggests a possible late Chadian age for the formation at this locality on the Askrigg Block (see Dunham and Wilson, 1985). The full age range of the formation is therefore currently undetermined.

References

1. ↑ [1.0](#) [1.1](#) Garwood, E J.1913.The Lower Carboniferous succession in the north-west of England.*Quarterly Journal of the Geological Society*, Vol. 68, 449–596.
2. ↑ [2.0](#) [2.1](#) Rose, W C C, and Dunham, K C.1977.Geology and hematite deposits of South Cumbria.*Economic Memoir of the Geological Survey of Great Britain*, Sheet 58, part 48 (England and Wales)
3. ↑ [3.0](#) [3.1](#) Mitchell, M.1978.Dinantian.168–177 in The geology of the Lake District. Moseley, F (editor).*Occasional Publication of the Yorkshire Geological Society*, No. 3
4. ↑ [4.0](#) [4.1](#) Pattison, J.1990.Geology of the Orton and Sunbiggin Tarn districts: 1:10 000 sheets NY60NW and NE.*British Geological Survey Technical Report*, WA/90/12
5. ↑ [5.0](#) [5.1](#) McCormac, M.2001.The Upper Palaeozoic rocks of the Shap and Penrith district, Edenside, Cumbria.*British Geological Survey Research Report*, RR/01/10.
6. [↑](#) Holliday, D W, Neves, R, and Owens, B.1979.Stratigraphy and palynology of early Dinantian (Carboniferous) strata in shallow boreholes near Ravenstonedale, Cumbria.*Proceedings of the Yorkshire Geological Society*, Vol. 42, 343–356

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