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# Rake Dike

## Highlights

Rake Dike shows an important fossiliferous sequence through the Marsdenian Stage.

## Introduction

This is one of the classic, fossiliferous sequences through the Marsdenian Stage. The geology of the site, which lies along a stream [SE 094 048]–[SE 112 058] running into Brownhill Reservoir, 11 km south of Huddersfield, West Yorkshire, is described by Green *et al.* (1878) and Bromehead *et al.* (1933). The biostratigraphy is discussed by Bisat (1920, 1924) and Ramsbottom (1969a).

## Description

### Lithostratigraphy

About 150 m of Millstone Grit are exposed here, ranging from the top part of the Kinderscout Grit to the base of the Huddersfield White Rock. It represents sediments deposited near the southern margins of the Huddersfield Basin. The Kinderscout Grit is not fully exposed, but a borehole drilled as part of the reservoir construction revealed about 75 m of the formation (Bisat, 1924). It includes both coarse, massive grits and finer grained, flaggy sandstones. There are also some shale partings, including one which is 9 m thick; although it has not yielded fossils, it is thought that this thick shale is a correlative of the Coreticulatum Marine Band, and thus marks the division between the upper and lower members of the Kinderscout Grit. A thin coal was reported from the top part of the formation.

The overlying 120 m consist of alternating sandstones and marine shales. There are three main sandstone bands in this part of the succession, known in ascending order as the Readycon Dean Grit, Heydon Rock and Beacon Hill Flags. The former is a coarsening upwards unit with burrowing in the upper part and an eroded top; the others are fine-grained flaggy units. They all probably represent small-scale sheet deltas, of the type described by Collinson (1988).

The top of the section is marked by a thick sandstone. It is poorly exposed here, although the base is clearly marked by a line of springs along the hillside. Its field relationships clearly point to it being the Huddersfield White Rock Formation.

### Biostratigraphy

Only marine fossils have been reported from this locality to date. The lowest occurrences are in the shales between the Upper Kinderscout Grit and the Readycon Dean Grit. The commonest fossil is the ammonoid *Bilinguites gracilis* Bisat, which was first described from this locality by Bisat (1924) as *R. reticulatum* (Phillips). From an exposure of the same bed at nearby Holm Wood Dyke, Bromehead *et al.* (1933) also reported *Dunbarella* sp. and *Posidoniella* sp.

The shales both below and above the Heydon Rock yield the ammonoid *Bilinguites bilinguis* (Salter), and thus belong to the zone of that name. This was also described for the first time from this locality by Bisat (1924), as *R. reticulatum* (Phillips) characteristic of the Marsdenian in the Central Province, and contrast with the larger-scale, turbidite-fronted deltas found lower in the Millstone Grit (e.g. the Kinderscout delta).

## Conclusions

Rake Dike shows an important sequence of fossiliferous rocks of Marsdenian age (just over 317 million years old). Ammonoids are particularly abundant here.

## [References](#)