
The Grey Mare's Tail, Borders

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L.J. McEwen and A. Werritty

Highlights

The Grey Mare's Tail is one of the highest waterfalls in Scotland. It provides a classic example of a waterfall located at the outfall of a valley, 'hanging' above the main valley as a result of differential glacial erosion.

Introduction

The Grey Mare's Tail is a spectacular waterfall, developed where a tributary valley joins the glacially overdeepened Moffatdale. It demonstrates particularly clear examples of geological controls in its detailed morphology.

Description

The Grey Mare's Tail waterfall is located in the upper part of Moffatdale on the Tail Burn, 1 km downstream of moraine-impounded Loch Skene (Geikie, 1901; Whittow, 1977; May, 1981; Gordon, 1993c) and to the south of Watch Knowe (606 m). Sissons (1967), in his reconstruction of the Loch Lomond Readvance in the Tweedsmuir Hills, locates the terminus of an ice-lobe at the head of the waterfall (c. 450 m). The waterfall itself is over 200 m high and comprises a series of cascades of varying height which fall over bedrock benches into a plunge pool beneath (Figure 2.10). The geology controls the detailed form of each cascade since the flow is at right angles to the strike of the underlying Silurian bedrock. These thick-bedded greywackes are often gritty or conglomeratic and include subsidiary shale or mudstone beds. Differential erosion of each of these units produces the detailed configuration for each alternating cascade and plunge pool.

Interpretation

The origin of the waterfall is due to more severe glacial erosion within the main valley now occupied by the Moffat Water than on the surrounding Tweedsmuir Hills (Sissons, 1967). This river flows in an unusually straight valley which in turn follows a major SW–NW trending fault from Moffat to St Mary's Loch. Differential erosion of the associated shatter belt by the glacier and later by Moffat Water has resulted in the tributary, Tail Burn, becoming a classic example of a hanging valley, in this case 200 m above the valley floor of Moffat Water.

Conclusion

The Grey Mare's Tail, one of Scotland's highest waterfalls, has been formed by differential glacial erosion within the Silurian greywackes of Moffatdale. The fault-controlled valley of the Moffat Water has been more readily eroded by repeated glacial episodes than have the surrounding Tweedsmuir Hills, resulting in a classic example of a 'hanging valley'. The precise topographic form of the waterfall is controlled by the sequence of grits, conglomerates and shales/mudstones which comprise the local greywackes.

[References](#)



(Figure 2.10) The Grey Mare's Tail in Moffatdale. (a) The Tail Burn descends from the plateau via a 200 m high waterfall in a series of cascades and plunge pools (photo: A. Werritty). (b) Detail of the first cascade and plunge pool on Tail Burn, showing the impact of the more resistant gritty conglomerates (cascade), the less resistant shales and the mudstone beds (plunge pool) on the detailed morphology of the waterfall (photo: A. Werritty).