

Field Meeting Report: The Talyllyn Valley, led by Warren Pratt 17th July 1988

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GIBSON, S. (1989). Field Meeting Report: The Talyllyn Valley, led by Warren Pratt 17th July 1988. *Proceedings of the Shropshire Geological Society*, **8**, 20–21. The purpose of the field meeting was to examine the evidence for the direction of movement of the Talyllyn Fault within the valley between Tywyn and the Cross Foxes Hotel, which runs on to Bala as the Bala Fault.

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INTRODUCTION

Led by Mr Warren Pratt of Aberystwyth University, five Society members turned out on a rather grey day to meet at Bird Rock [SH 642 071], a spectacular crag covered with cormorants and jackdaws.

The day's field work was set in the valley that runs from Tywyn on the coast to the Cross Foxes Hotel at the junction of the A470 and A487.

GEOLOGICAL SETTING

The main purpose of the day was to examine evidence for the direction of movement of the Talyllyn Fault that guides this valley and runs on the Bala as the Bala fault. This has weakened the rocks so that a valley has been carved out to the south of Cader Idris. The rocks were Ordovician in age (Figure 1).

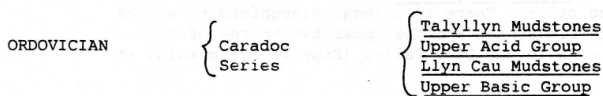


Figure 1: Generalised stratigraphic column for the Ordovician in the vicinity of the Talyllyn Fault.

ITINERARY

LOCALITY 1: Bird Rock [SH 642 071]

At 762 m high this was a quarried and bird covered crag. It was massive and in places jointed. Clearly an igneous rock, it seemed to be mainly an acid lava flow: the Upper Acid Group. Originally it was a sea-cliff and the land to the west of it is very low lying.

LOCALITY 2: Close to Bird Rock [SH 642 070]

Although only a short distance from the previous exposure, the rock was a cleaved mudstone: the Talyllyn Mudstone. Here the bedding could be seen at about 30° south east, this being the southern limb of the Harlech Dome. However, this simple pattern is made more complex as the beds are all folded into broad folds with axes trending north to south. Mr Pratt found unexpected thicknesses of mudstones in the area and suggested that decollement had occurred between the Talyllyn mudstones and the underlying Upper Acid Group.

The view to the north of the valley revealed bluffs and valleys that corresponded to the outcrops of the softer mudstones and harder igneous rock.

LOCALITY 3: Castell-y-Bere [SH 661 080]

This ruin is spectacularly placed high on a rock outcrop in the valley. Much of the exposure is cleaved mudstone but high up in the castle itself flow-banded rhyolite was clearly seen.

LOCALITY 4: Abergynolwyn Station [SH 672 063]

Up until this point the rocks were undisturbed by faulting but here, where the cleaved mudstones were exposed along the narrow gauge railway cutting to the east of the Station, fine slickencrysts were seen. Mr Pratt explained that these indicated the direction of movement of the beds. Slickencrysts grow along lines of movement of faults. They are a form of slickenside but have a number of steps in their development. When in

situ the fault has moved in the direction that feels smooth to the touch. Unfortunately the exposures were very weathered and overgrown, although fine examples were found loose on the ground.

**LOCALITY 5: Abergynolwyn plantation
[SH 670 067]**

In a burnt-out plantation on the north side of the valley were a number of small exposures of Talyllyn mudstones showing excellent kink banding. These bands again indicate the direction of movement of the fault, and were well seen on the cleavage faces of the mudstones.

LOCALITY 6: Hotel on Tal-y-llyn Lake [SH 712 095]

This lake basin is clearly glacial in origin but an area of rough disturbed ground was seen closing the lake to the west. The Afon Dysyndd has to cut a course here through what is clearly a landslip. A view to the south side of the valley from behind the chapel showed an area of the Talyllyn mudstone high on the valley side that had slipped away. Mr Pratt had been above the adjoining area that had not yet slipped and told us that an area of marshy ground indicated that this too will slide one day. Such a slip will reach the hotel.

Post glacial slips commonly occur when the valley sides are no longer held up by the glacier and have been undermined by the glacier's action.

LOCALITY 7: Roadside Quarry [SH 752 136]

A quarry to the south of the road revealed igneous rocks again and these were exposed above us in spectacular crags. These were of the Upper Acid Group. However, at a gravel pit to the north of the road at grid [SH 756 139] the Talyllyn mudstones were being quarried. This would indicate that the downthrow of the fault was to the north as the younger rocks were seen on that side. However, slickencrysts in this quarry showed evidence to the contrary, again suggesting several phases of movement along this fault.

LOCALITY 8: Machynlleth Station

The field excursion ended with a quick visit to a spectacular fold behind Machynlleth Station.

Although several of the group were experienced geologists, it was intensely interesting to see at first hand a young geologist working on such complex structural problems. We only saw two rock types all day but learned much about the evidence that can be found when clearly displaced rocks are not there to help!

Disclaimer - The information contained in this account has been prepared from notes taken during the field meeting. Its sole aim is to provide a record of what was seen and provide an insight into the faulting of the Talyllyn Valley. It should not be used for any other purpose or construed as permission or an invitation to visit the sites or localities mentioned.

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