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# Maesyrior

## Highlights

This locality shows excellent evidence for the sub-ice-sheet formation of South Wales glacial meltwater channels. They were formed by water under great hydrostatic pressure beneath the ice, rather than as subaerial streams draining ice impounded lakes.

## Introduction

At Maesyrior [SN 361 195], west of Carmarthen, a number of glacial meltwater channels provides evidence for the Late Devensian deglaciation of central South Wales. The channels are a rare example in South Wales of a meltwater channel system, and have been used to reconstruct a sequence of glacial drainage events as ice-thinning occurred. The distribution of the channels was mapped and described by Bowen (1965, 1967, 1969a, 1970a).

## Description

The Maesyrior channel system occupies an area some 2.5 km<sup>2</sup> lying to the north of the major east-west trending valley now occupied by Llanllwch Bog (Thomas 1965). The distribution of Late Pleistocene deposits in the area was mapped by Strahan *et al.* (1909), and Bowen (1970a) demonstrated the relationship between these deposits and the channels — see (Figure 16). The channels are, for the most part, cut in Ordovician shales, and they are dry and have steep sides; several channels commence and end abruptly, and one example demonstrates a humped (irregular up and down) profile.

## Interpretation

Channel features associated with glacial meltwater were first noted in the Carmarthen area by Strahan *et al.* (1909) who described a 'glacial overflow-valley' at Cwm-du-hen, near Merthyr and interpreted it as having been formed by northward flowing, subaerial meltwater issuing from the large valley to the south which was filled with ice. The Merthyr channel has since been reinterpreted as a subglacial chute (Bowen 1970a). Indeed, it was suggested for many years that meltwater channels in South Wales and elsewhere were associated with 'overflow' from postulated glacially impounded lakes. Workers, including Charlesworth (1929), Griffiths (1939), Driscoll (1953) and Crampton (1966c) have reconstructed such supposed ice-dammed lakes across South Wales, extrapolating Kendall's (1902) simple model.

Bowen (1967, 1970a) reviewed the evidence for such lakes in South Wales and observed that, in nearly all cases, shoreline features, bottom deposits and deltas — features that would normally be associated with such lakes — were conspicuously absent. Instead, he demonstrated that the majority of the channels had been formed by subglacial meltwater during ice-thinning, in the manner described by Flint (1929, 1942), Hoppe (1950, 1957) and Mannerfelt (1945). Bowen (1967) observed that patterns of meltwater channels, particularly around Carmarthen, confirmed this view. In all, he mapped some 370 such channels in central South Wales (Bowen 1965, 1980b), but noted that 'systems' of such channels were rare. One exception was the channel 'system' at Maesyrior, for which he reconstructed a sequence of channel development events.

First, the oldest channels at Maesyrior, which begin and end abruptly, were superimposed across the shale spurs by englacial streams flowing within the decaying ice. Alternatively, other channels demonstrating marked humped-profiles were cut later by subglacial meltwater flowing under considerable hydrostatic pressure. As the ice continued to thin, the channels became increasingly controlled by the underlying relief until, finally, meltwater flowed along the existing valley floor and sides. Bowen (1970a) considered that a Late Devensian age was likely in view of the freshness of the features.

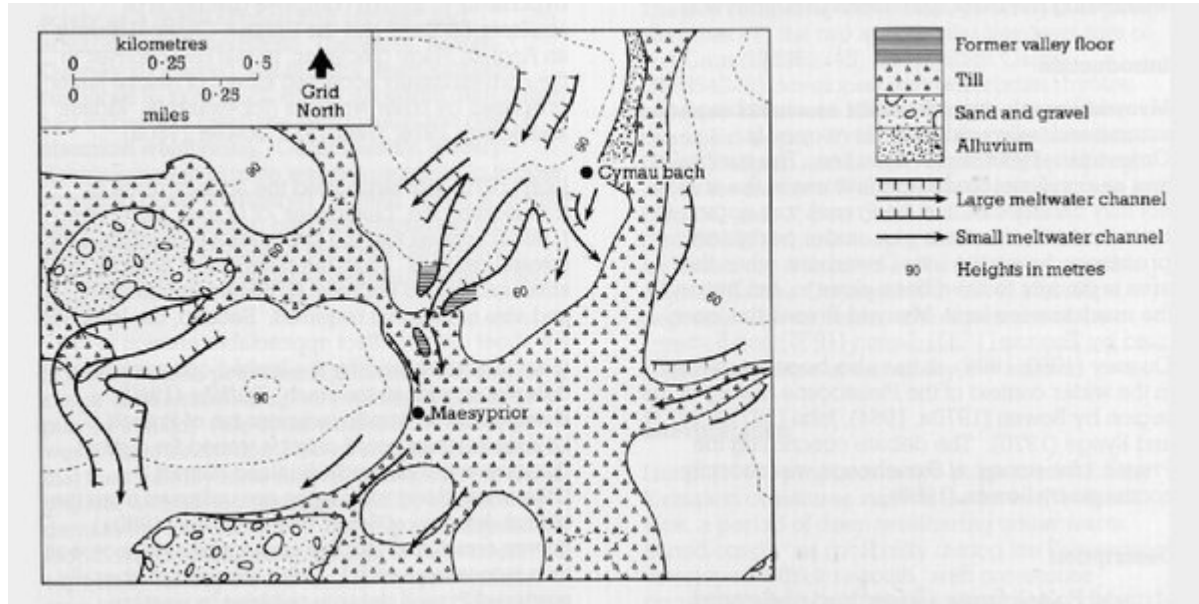
The Maesyrior meltwater channels exhibit a number of features that cannot be reconciled with either an ice-marginal origin, nor an origin as direct overflow channels. The site therefore provides evidence to demonstrate the subglacial

origin of the channels and to repudiate the long-held belief that similar channels throughout South Wales originated as overflows from major impounded glacial lakes.

## Conclusions

The Maesyrior glacial drainage channels were probably fashioned underneath an ice-sheet. They are unusual because it is possible to infer stages in the process of ice-thinning from their mutual relationships. They also add to other evidence which shows that the last major ice-sheet to cover Wales extended at least as far south as this vicinity.

## References



(Figure 16) The Maesyrior meltwater channel system (after Bowen 1970a)