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# Afon Teifi at Cors Caron, Ceredigion

[SN 684 627]–[SN 697 644]

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## Highlights

At this site, the river flows through organic and fine inorganic materials deposited on the site of a former lake, and is a type example of channel development in finer-grade materials. The role of vegetation is evident in channel development, while the lake sediments and longer-term development at this site are also of considerable scientific interest and significance.

## Introduction

The Afon Teifi in its upper reaches flows over Cors Caron, an area that was once a shallow lake, and which in post-glacial times became filled by fen peat, over which have developed three large raised peat bogs. The present-day channel of the Teifi is cutting through peat deposits accumulated in this former lake basin. Undercutting of mineral material below the peat results in the collapse of large blocks of peat. There is also an important contrast between the right and left banks of the river, demonstrating the influence of vegetation, with moor-grass roots on the right bank adding extra stability. Part of the reach has been artificially straightened to create shallow pools (flashes). An abandoned course of the river has been left as a marshy environment. Transport processes are dominated by suspended sediment movement, in contrast to upstream and downstream reaches where coarse bedload transport is more significant.

## Description

The present-day Teifi originates on the western slopes of the Cambrian Mountains in the Teifi lakes and flows through a V-shaped valley before entering a wide-floored valley 10 km from its source. The evolution of the river pattern owes much to Caledonian folding and faulting movements (Jones, 1949) and there is strong evidence to suggest that the Teifi was once a much longer river before the capture of its headwaters by the proto-Ystwyth (Figure 3.34). Thus the abandoned high-level valley between the present-day watershed of the Ystwyth and that of the Teifi, and capture points on the Ystwyth at Ponrhydygroes [SN 738 723] and on the Rheidol at Devil's Bridge [SN 742 773], were used as evidence of a two-stage capture of the proto-Teifi by the Ystwyth and then the Rheidol (Howe and Thomas, 1963). This, it was suggested, was aided by excavation along fault lines. Although little work has been done to date the relative ages of this two-stage capture, the capture of the proto-Ystwyth by the Rheidol was probably relatively recent, possibly during an early interglacial or the immediate pre-glacial period (Howe and Thomas, 1963).

Downstream of Ponrhydfendigaid, the river changes both direction and character, assuming a southwesterly trend following the axis of the Teifi Anticline (Jones, 1949). The river at this point enters a 800 ha valley bog, the origins of which have been discussed in greater detail by Godwin and Mitchell (1938), Turner (1964), the NCC (1968), Godwin (1981) and Campbell and Bowen (1989). The bog owes its origin to the damming of a large lake, occupying several square kilometres, behind a terminal moraine on which the village of Tregaron is located. The lake gradually filled in and drained. The first deposits in such a lake were open-water muds and these were followed subsequently by fen peat and then by ombrogenous *Sphagnum* bog (Figure 3.35). This *Sphagnum* peat has accumulated to form three convex raised bogs (the west, north-east and south-east bogs) that have subsequently been altered to varying degrees by peat cutting and drainage operations. The bogs rise over 10 m above the present river level, and are some of the best developed and best preserved in Britain. Two of these raised bogs were studied in more detail (Godwin and Mitchell, 1938), and pollen analysis was used to illustrate the vegetational history of the area. The development of the *Sphagnum* peat was seen to be related to the prevailing climatic conditions such that rates of peat growth were particularly slow in dry conditions, thus forming a 'retardation layer' of highly humified peat (Turner, 1964).

The Teifi at this point flows over silty alluvium such that the channel itself has features unique to this kind of environment. Between the channel and the raised bogs (particularly that on the right bank of the river) there is a well-developed flood level. Such levels are colonized by *Juncus* and are periodically flooded. They are separated from the domes of the bogs by sloping margins known as 'rands'. Permanent pools of water adjacent to the main stream have been created near the mouths of tributary streams. Such pools are known as 'flashes'. Between the Treflyn and Maesllyn flash, the channel has been artificially straightened (NCC, 1968). The river banks in this section are dominated by silts, which are easily eroded in peak flows such that there is occasional slumping of fines into the main channel. Transport processes are dominantly by sediment in suspension, providing a direct contrast to those upper reaches of the Teifi where bedload transport is more important. In places, the channel is bordered by *Sphagnum* peat and in such sections the width : depth ratios are lower than those farther upstream. Reedgrass occurs in places along the river bank and this adds some stability to the fine sediments. There is thus a contrast between the right bank (dominated by reeds) and the left bank (grass-covered) such that erosion tends to be occurring more rapidly on the latter. In the straightened section [SN 688 633], the former channels have been left as marshy environments, which are gradually being recolonized. Soils are predominantly gley and peaty (Rudeforth, 1970). Finer gravels are deposited at the confluence of the main Teifi with smaller tributaries in the reach, and there are occasional patches of such deposits at levels higher than the present channel.

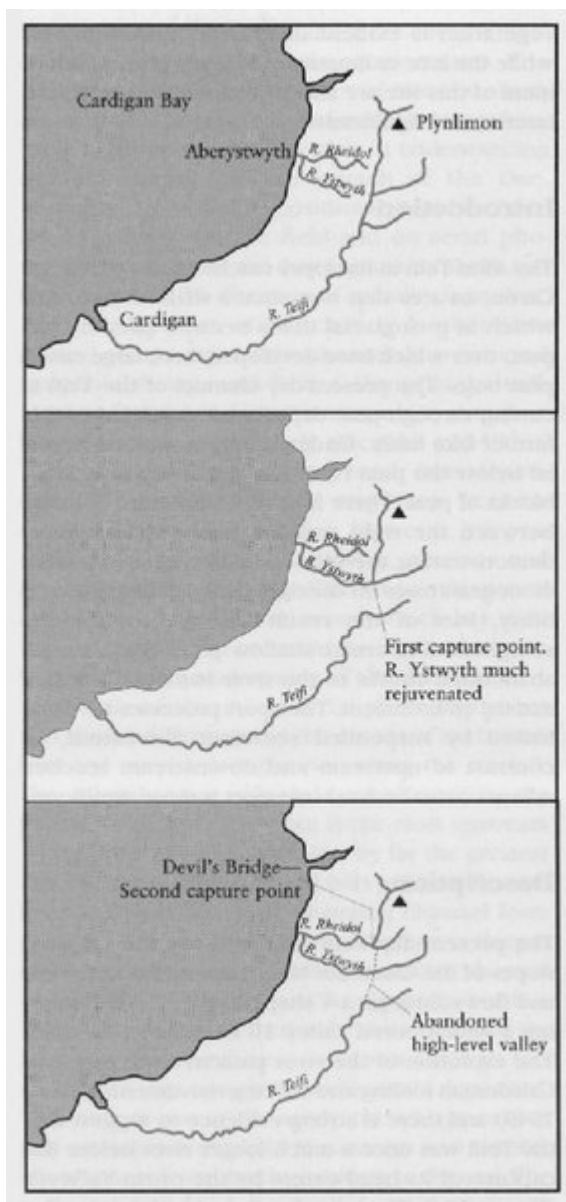
## Interpretation

Although work has been carried out into the stratigraphy and vegetation characteristics of the raised bogs and into the hydrological and nutrient status of such features, little work has been done on the geomorphological and sediment characteristics of the Teifi in this reach. However, the reach provides an important contrast to those upstream and downstream sections where the river is more 'typical' of those in the area (gravel-bedded with composite banks), and is unique in being a fine-sediment reach sandwiched between such sections. As such, it provides an opportunity to measure differences in sediment transport and bank erosion between the contrasting reaches.

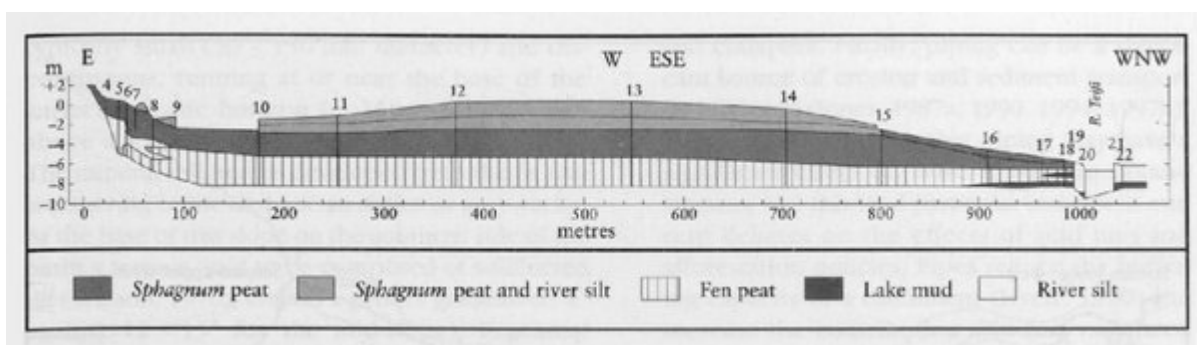
## Conclusion

On the section of the Teifi downstream of Pontrhydfendigaid at Cors Caron, the channel flows through an area of peat bogs which were formed as the result of a developing vegetation succession in a terminal moraine-dammed lake at Tregaron (Godwin and Mitchell, 1938). Transport and sedimentation processes are dominated by the finer lacustrine deposits which are easily eroded from the channel banks, especially where such banks are not protected by coarse vegetation. This unusual reach contrasts with those upstream and downstream, which are dominated by coarse material. Although work has been done on the bog evolution and vegetation succession, little work has yet been carried out on the fluvial geomorphology.

## [References](#)



(Figure 3.34) The capture of the upper Afon Teifi by the Rheidol and Ystwyth. (After Howe and Thomas, 1963.)



(Figure 3.35) The Afon Teifi: the southeastern raised bog at Tregaron, central Wales. Stratigraphic section established by borings between the hillside and Afon Teifi. The division of the peat and the domed shape of the bog are quite distinct. (After Godwin and Mitchell, 1938.)