
Wîg

[SH 186 258]

Introduction

Wîg is the most accessible locality to show the overstep of the Lower Arenig onto the Precambrian of the Aberdaron area of Llyn. It includes the basal stratotype of the Wîg Bach Formation and is the type locality for the 'Wîg Member'.

From the Harlech Dome towards the Irish Sea positive area the Arenig rocks transgress the Tremadoc and the whole Cambrian (see Trwyn-llêch-y-doll), to overstep onto the Precambrian of western Llŷn, where, however, most of the basal Ordovician contacts are faulted. Matley (1928, 1932) considered that the Ordovician was predominantly thrust against the Precambrian, but Shackleton (1956) detailed unconformable contacts and inferred that the Ordovician was primarily unconformable on the Precambrian.

Beckly (1988) described the Ordovician stratigraphy of south-west Llŷn, with emphasis on biostratigraphy; he reconstructed the palaeogeography of the area, which is complicated through the interaction of a marine transgression across contemporaneously faulted blocks (Beckly, 1987). Gibbons and McCarroll (1993) described the geology of the Aberdaron area and revised the stratigraphy of the Ordovician, though part of their terminology is emended in Rushton and Howells (1998).

Description

A sea-cliff at Wîg shows exposures of Precambrian mylonitic rocks of the Sarn Complex in the Llŷn Shear Zone and Ordovician sedimentary rocks of the Wîg Bach Formation. The critical exposure is a small faulted sliver caught between faulted mylonites on the west and the Wîg Fault on the east. Resting on mylonites are about 3 m of local basal Ordovician rocks (Figure 9.7), showing a clear plane of unconformity dipping ESE at about 55°. The conglomeratic base is 30 cm thick and includes cobbles of grey chert and pebbles of jasper. It is overlain by ferruginous sandstones interbedded with thin mudstones; and these are overlain by a 13 cm bed of conglomeratic sandstone containing ferruginous, commonly phosphatized, ooids, that is thought to represent a sediment-starved condensed unit (Gibbons and McCarroll, 1993). Above is an abrupt change to dark-grey siltstones with fine sandy laminae and phosphate nodules, seen for about 1 m, above which the succession is truncated by the Wîg Fault.

On the east side of the Wîg Fault is a succession in which the lowest beds resemble the siltstones to the west of the fault (Figure 9.7); these pass up into bioturbated sandstones and are capped by Beckly's 'junction bed' of indurated and bioturbated pebbly phosphatic sandstone, which Gibbons and McCarroll interpreted as a hardground formed during a period of non-deposition. The Wîg Member, consisting of 30 m of dark-grey mudstone and siltstone with phosphatic nodules, overlies the 'junction bed' and has its type locality here, at Wîg Bach. Poorly preserved *Merlinia* and *Azygograptus* have been found at Wîg Bach, and numerous *Merlinia* at Ogof Ddeuddwrs [SH 1868 2550] to the south, but the best evidence for the Moridunian age of the Wîg Member is the presence of *Merlinia selwynii* (Salter) and *Azygograptus eitiionicus* Elles in correlative beds at Maen Gwelionwy [SH 2007 2599] (Beckly, 1988; Gibbons and McCarroll, 1993, p. 29).

Interpretation

The hiatus beneath the base of the Arenig increases in magnitude from the Harlech Dome north-west towards Anglesey: at Bryn Glas it rests on the Tremadoc (see site report), at Trwyn-llêch-y-doll on St Tudwal's Peninsula it oversteps the Cambrian, and in the Aberdaron area it rests on Precambrian. The site at Wîg not only illustrates the unconformity, but of the few unfaulted basal Ordovician contacts known around Aberdaron it is the only one to give an indication of the Moridunian (early Arenig) age of the transgression in this area; at St Tudwal's Peninsula and on Anglesey, in contrast,

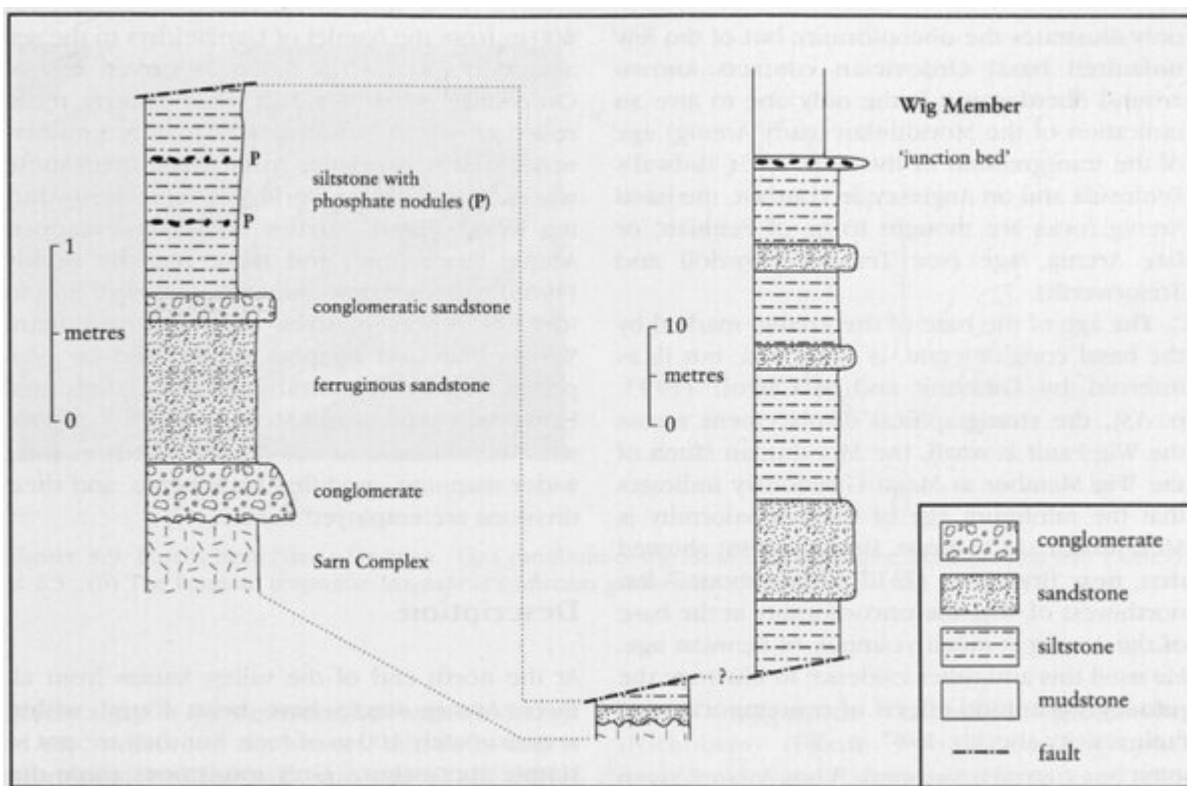
the basal Arenig rocks are thought to be of Fennian, or late Arenig, age (see Trwyn-llêch-y-doll and Treiorwerth).

The age of the base of the Arenig, marked by the basal conglomerate, is unproved; but if, as inferred by Gibbons and McCarroll (1993, p. 33), the stratigraphical displacement across the Wîg Fault is small, the Moridunian fauna of the Wîg Member at Maen Gwenonwy indicates that the minimum age of the unconformity is Moridunian. In contrast, Beckly (1988) showed that, near Bryncroes [SH 2317 3150], about 7 km north-west of Wîg, the unconformity at the base of the Arenig is much younger, of Fennian age. He used this and other evidence to illustrate the palaeogeographical effects of contemporaneous fault activity (Beckly, 1987, p. 28).

Conclusions

Wîg is an important site for interpreting Ordovician stratigraphy and palaeogeography of LIS·n. It shows the basal unconformity on the Precambrian and is the type area for the Wîg Member, whose fossils from a nearby locality demonstrate the early Arenig age of the marine transgression in this area.

References



(Figure 9.7) Stratigraphical section through the base of the Wîg Bach Formation at Wîg, with an enlargement (left) of the basal unconformity on the Sarn Complex (Precambrian). The base of the mudstones of the Wîg Member appear above the 'junction bed'. After Beckly (1985, unpublished).