
1 Ffridd-bryn-coch

On this short, fairly easy walk (about 1.5 to 2 hours) on the eastern flank of the Dolwen pericline, the oldest Cambrian rocks in the Harlech dome, the Dolwen, Llanbedr and lower Rhinog formations, are visited. The localities (Figure 7) are numbered from east to west, descending through the generally eastward-dipping succession, but they may be visited in reverse order. Park in the lay-by [SH 716 286] about 200 m S of Gelli-goch farm on the A470. Follow the minor road from the farm westwards over the Afon Eden to the bridge over the Afon Crawcwellt. Most of the exposures are in the stream, and it is advisable to consult with the farmer at Ffridd-bryncoch before visiting *them*.

Locality 1 [SH 71221 28984] A number of poor, small outcrops of coarse-grained, pebbly, graded quartzose sandstone are of the Rhinog Formation. The sandstone is typical of the Harlech Grits Group although it is better examined on the Barmouth excursion (No. 2).

Locality 2 [SH 71086 28953] On the east of the bridge and in the adjacent gorge are purplish grey and grey cleaved silty mudstones of the Llanbedr Formation. This is the lowest argillaceous formation in the Cambrian succession. It is exposed around the core of the Dolwen pericline and, to the west of the Rhinogs, in a belt south from Llanfair. Exact correlation between these two areas is difficult because of the presence in the west of interbedded sandstones in the upper part of the formation, which may equate to the lower parts of the Rhinog Formation elsewhere. A strong slaty cleavage is present in places, and locally this formation has been worked for slate. At this locality there are a few sills, as little as 0.5 m thick, of dolerite and feldspar-hornblende porphyry. They were emplaced about 3.5 to 4 km below the contemporary land surface during the Rhobell Volcanic Group magmatic episode in late Tremadoc times. The intrusions are displaced by a minor fault along the gorge, and they are gently folded.

Locality 3 [SH 70869 28918] The transition from the Dolwen to Llanbedr formations is clearly seen. Examined from west to east the predominantly green or grey interbedded siltstone and sandstone are overlain by 2 m of thinly interbedded pink and green banded and green sandstone and purple or grey silty mudstone with tuffaceous laminae. The sandy beds are less than 10 cm thick. The base of the Llanbedr Formation is taken where the purple silty mudstone is free of sandstone laminae.

The full thickness of the Dolwen Formation is some 575 m but the lower 280 m have been seen only in the Bryn-teg Borehole. The formation consists mainly of green or grey siltstone and sandstone, the latter dominant in three thick units in alternation with three dominantly siltstone units. There is an upward compositional change in the sandstone from lithic greywacke through subgreywacke to feldspathic greywacke and subarkose. In the exposed parts of the formation feldspathic greywacke is dominant with a few beds of coarse-grained subarkose. The sedimentary structures are consistent with the sediments having been deposited in shallow water, probably in deltaic or open shelf environment, under the influence of current or wave action. One fossil of Lower Cambrian age, *Platysolenites antiquissimus* was found in the Bryn-teg Borehole.

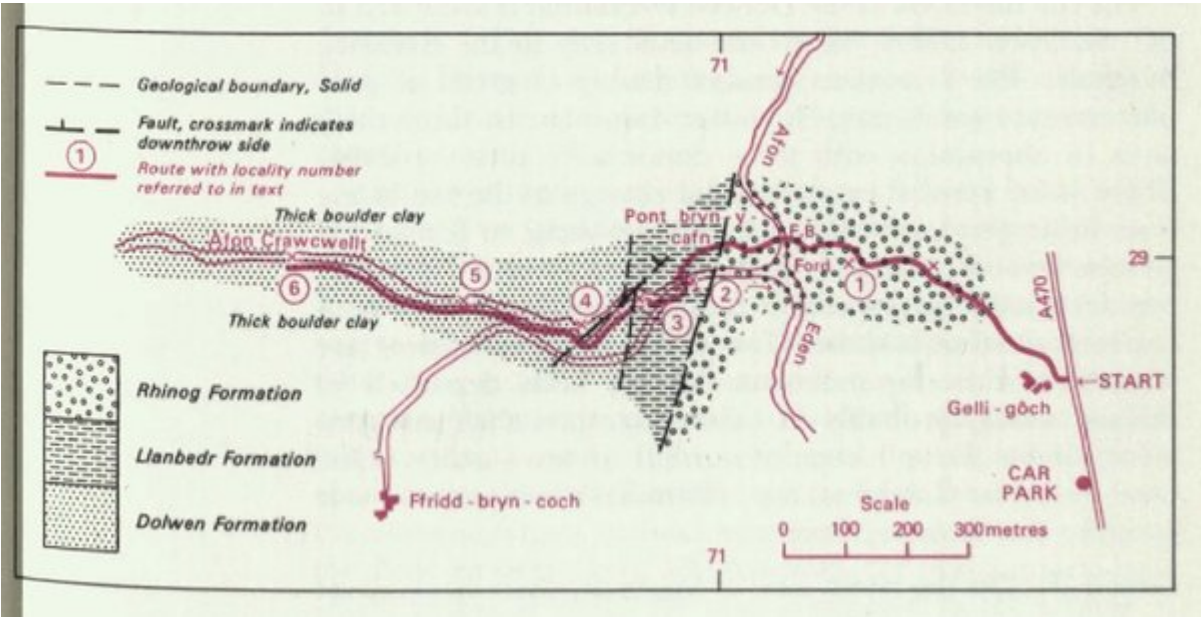
Locality 4 [SH 70774 28893] On the north side of the fault, there is excellent exposure of well bedded grey or green siltstone and commonly pyritic sandstone. The siltstone is alternately massive and laminated. Locally there are thin beds of micaceous fine sandstone, and 1 cm-thick magnetite-rich seams. The fine sandstone beds show parallel- and cross-lamination, bands of intensely convoluted lamination, flame structures and sand balls.

Locality 5 [SH 70572 28939] The predominantly silty or impure fine sandy nature of the Dolwen Formation is well demonstrated in this section, but there is, in addition, an outcrop of coarse-grained quartzose sandstone containing abundant detrital magnetite. Such rocks occur only sporadically in the upper part of the Dolwen Formation, though they are plentiful higher in the Harlech Grits Group.

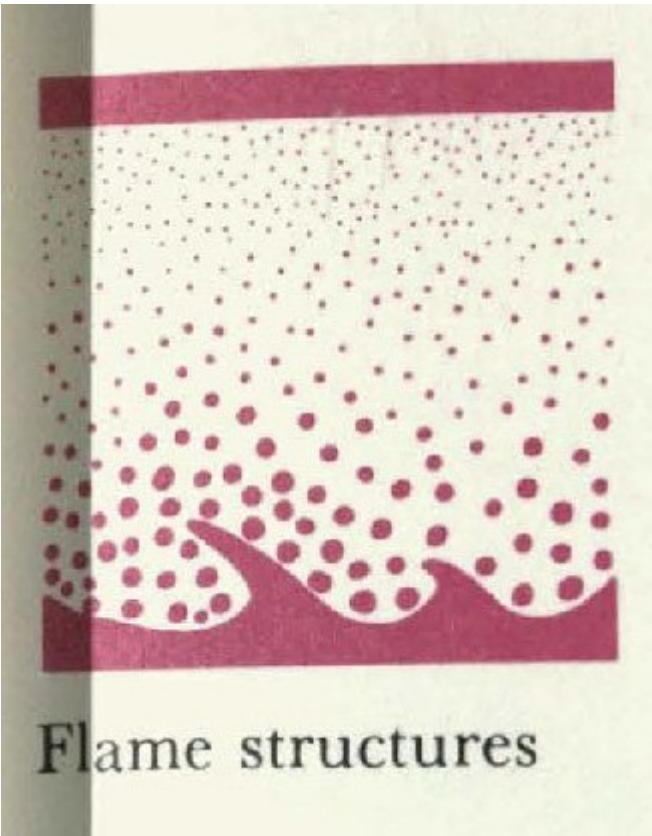
Locality 6 [SH 70264 28989] Thick deposits of locally derived boulder clay have been progressively downcut by the Afon Crawcwellt and there is evidence of an old stream course in about 60 cm of cobbly sandy gravel with black mangiferous cement resting on boulder clay about 2 m above the stream bed.

(Figure 45) Flame structures.

References



(Figure 7) Geology of the Ffridd-bryn-coch area and excursion route No. 1.



(Figure 45) Flame structures.