Damery Bridge

[ST 7055 9428]

Introduction

The marine Silurian rocks of the Tortworth area form an inlier, and are unconformably overlain by Old Red Sandstone strata to the south. In the north-west there is a faulted contact with the Lower Old Red Sandstone, but in the north, east and west the Lower Palaeozoic rocks disappear under a Mesozoic cover (Figure 3.14). The Llandovery strata of the Tortworth area were assigned to two formations, originally termed the Damery Beds and the Tortworth Beds, by Curtis (1955a). Beneath the Damery Formation, a basaltic lava (the 'Lower Trap') lies unconformably on shales of Tremadoc age, and a second basaltic flow (the 'Upper Trap') separates the Damery and Tortworth formations. The lower flow is exposed in Damery Quarry [ST 7045 9440], to the north of Damery Bridge, and the upper flow at the Cullimore's Quarry site. The type locality of the Damery Formation is the valley of the Little Avon River near Damery Bridge, and Curtis (1972) noted that the beds are particularly well exposed in the roadside 50 m south of the bridge itself (see also Reed and Reynolds, 1908b, who recorded a small quarry, now disappeared, at this point). Here the beds dip to the south-east at 30°. The thickness of the formation in the area is 122 m to 183 m (Cave 1977); the beds, in the road cutting are near the middle of the succession. Fossils from at or near this locality have been listed by several authors, principally Reed and Reynolds (1908a), Curtis (1972) and Cave (1977). These beds are not now well exposed, but the road cutting provides the best site for opening representative exposures of the Damery Formation.

Description

The Damery Formation comprises alternating beds of fine sandstone, siltstone, mudstone and shale, with the sandstones subordinate at Damery Bridge (Curtis, 1972). The sandstones are generally thin and impersistent; some are calcareous and rich in fossils, weathering to characteristic decalcified rottenstones, and many of them have rippled upper surfaces.

The Damery Formation contains a rich marine fauna, dominated by brachiopods but with crinoids, tentaculitids, trilobites, corals, gastropods, bivalves and conodonts. Ziegler *et al.* (1968b) recorded *Costistricklandia lirata alpha* at Damery Bridge, above beds with *Eocoelia curtisi;* these brachiopods indicate a mid-Telychian age. Other brachiopods include *Atrypa reticularis, Brachyprion arenacea, Pentameroides gotlandicus, Howellella anglica* and *Leptostrophia compressa,* and the trilobite *Lygdozoon weaveri* is common (Curtis, 1972; Cave, 1977). The fauna in the upper two-thirds of the formation was assigned to the *Costistricklandia* benthic community by Ziegler *et al.* (1968b). The beds below with *Eocoelia curtisi* were well displayed at one time in a temporary exposure behind a building 30 m south of Damery Bridge; this locality was selected by Ziegler *et al.* (1968a) as displaying the typical fauna of the *Eocoelia* benthic community (Figure 3.15). Conodonts reported from the road cutting by Aldridge (1972) include *Icriodella inconstans* and *Ozarkodina gulletensis.* Graptolites are rare, but Reed and Reynolds (1908b, p. 517) reported a well-preserved specimen of *Monograptus priodon* from Damery, and Curtis (1972, p. 16) recorded *Monograptus marri in the* Damery Formation. An extensive acritarch and spore microflora awaits description.

Trace fossils also occur. Benton and Hiscock (1996) cut trenches to create new exposures on the west side of the road cutting and reported the trace fossils *Palaeophycus, Gyrolithes, Palaeosemaeostoma* (perhaps a medusoid resting trace), *Rusophycus* and *Tomaculum.*

Interpretation

The sediments and fossils show that the Damery Formation was deposited in an open marine, shelf setting. Groove marks on the bases of many sandstone beds appear to have been produced by brachiopod valves and indicate chaotic transport of shell debris; palaeocurrent indications are multidirectional (Benton and Hiscock, 1996). Benton and Hiscock (1996) interpreted these features as indicative of deposition by storm-surge ebb currents below normal wave base in a

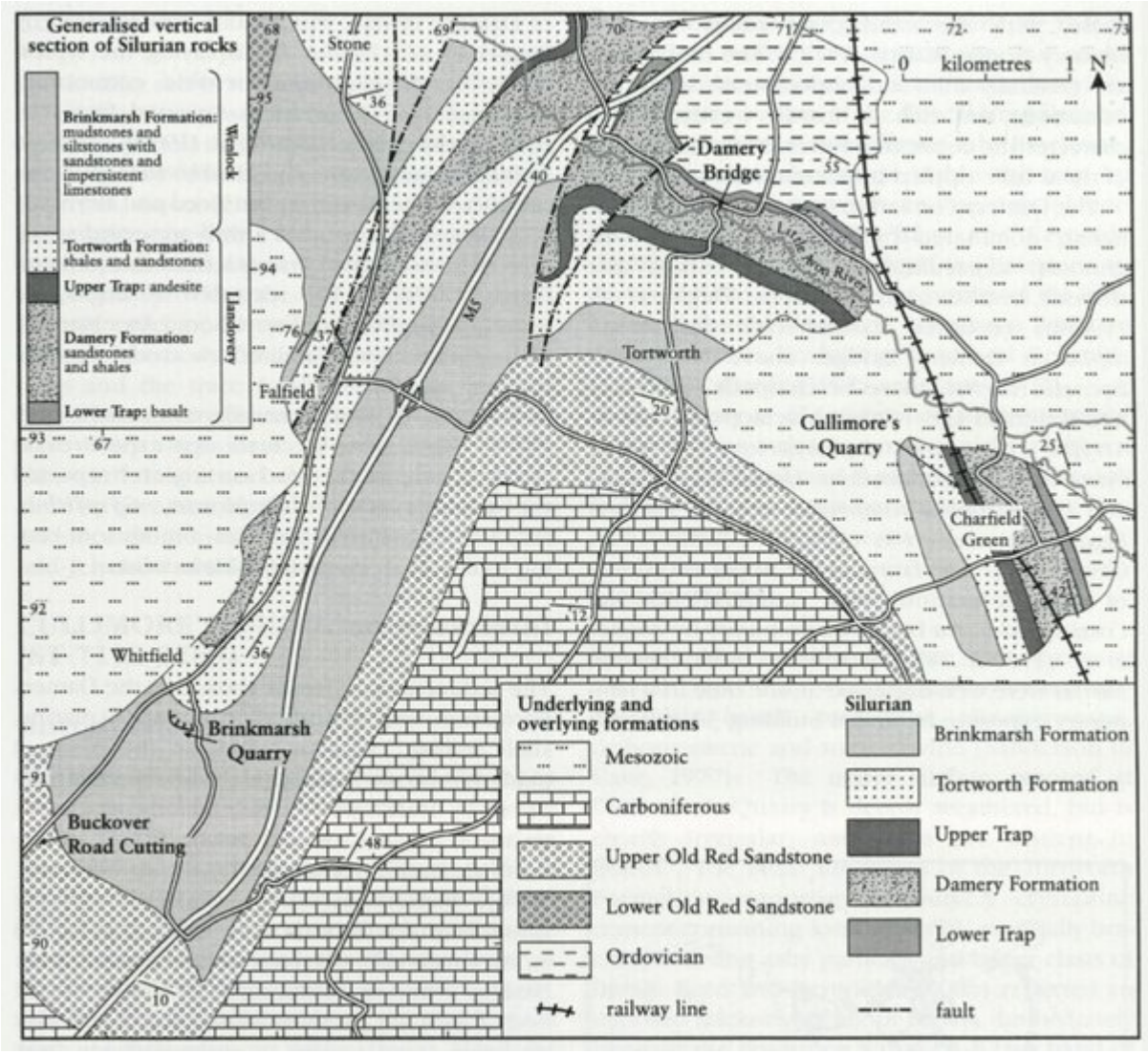
mid- to distal-shelf environment; the body fossils are preserved in coquinas and have probably come to rest at some distance from their life habitat. It is, therefore, not possible to deduce from the stratigraphical sequence of benthic communities (*Eocoelia* community overlain by *Costistricklandia* community) that there was a deepening of the depositional area during sedimentation of the Damery Formation. The trace fossil assemblage was referred to the *Cruziana* Ichnofacies by Benton and Hiscock (1996), which they considered to indicate an offshore location below normal wave base.

This site links with others in the Welsh Borderland (Hughley Brook, Gullet Quarry, Wistanstow) to provide a picture of the pattern of deposition across the western margin of the Midland Platform during the Telychian. It also links with the nearby site of Cullimore's Quarry to illustrate the developing local tectonic, depositional and volcanological setting during the late Llandovery.

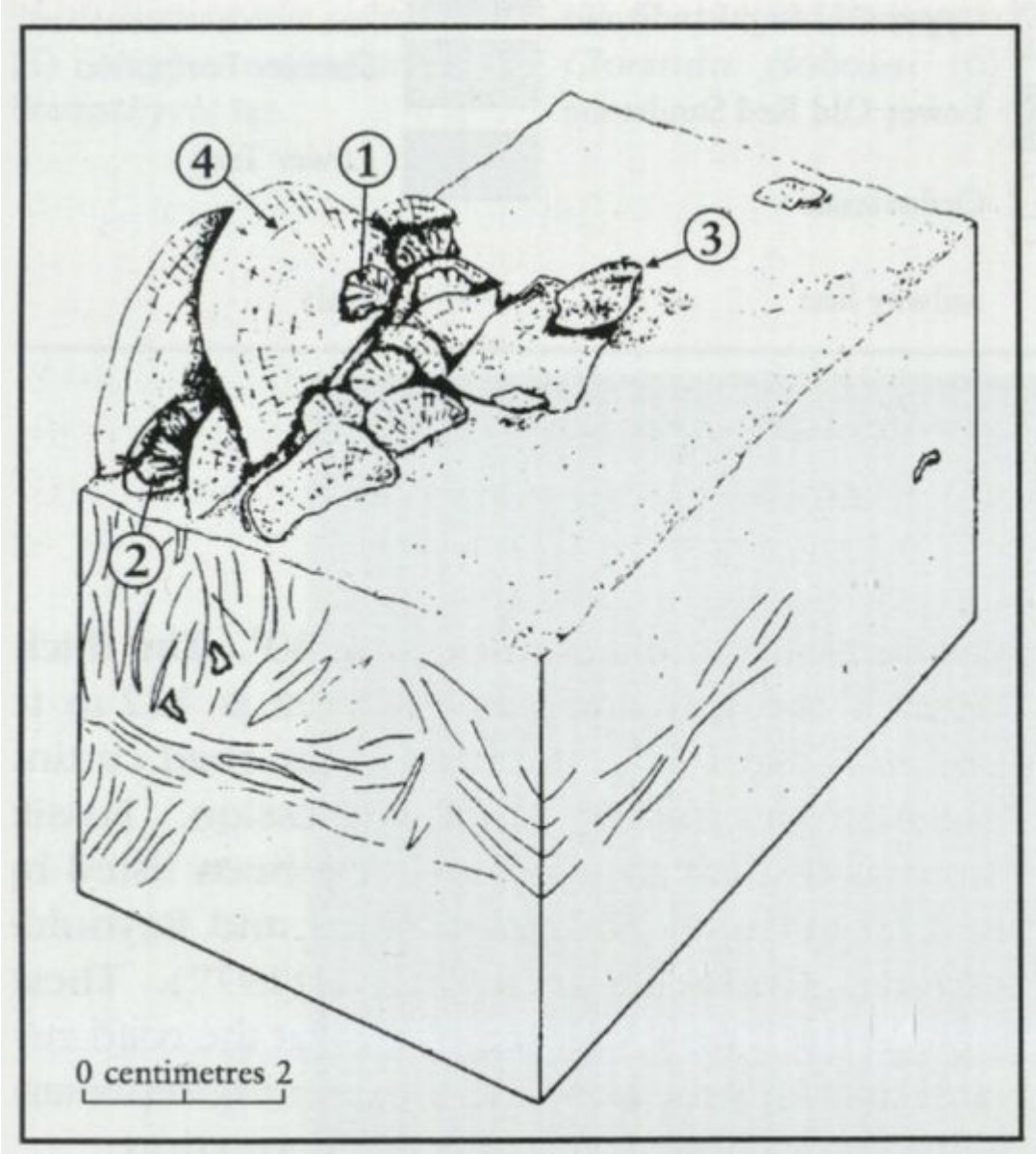
Conclusions

This locality serves to illustrate the development of late Llandovery sediments and faunas in the southern part of the Welsh Borderland. It is the type locality of the Damery Formation, a Telychian sequence of interbedded sandstones and mudstones with a rich fauna dominated by brachiopods. The Damery Formation at or near this locality provides the type horizons of several fossil brachiopod species. The transported nature of the body fossils, the sedimentary structures and the trace fossil assemblage indicate deposition in an offshore setting, below normal wave base. Exposures are uncommon in the Tortworth Inlier, and this locality and others close by have historically provided almost all the evidence on the sedimentology and biota of the mid-Telychian of this region.

References



(Figure 3.14) Geological map of the Tortworth Inlier (after Curtis, 1972).



(Figure 3.15) Reconstruction of the Eocoelia benthic community, based on a collection from the Damery Formation 30 m south of Damery Bridge (after Ziegler et al., 1968a). The fossils represented are: (1) Eocoelia curtisi; (2) Ferganella aff. decemplicata; (3) Dalejina sp.; (4) a leptostrophiid brachiopod.