Hillend Farm

[SO 3956 8756]

Introduction

Following a major glacio-eustatic regression of the sea in the latest Ordovician, the Llandovery was a time of rising sea levels and transgression. In the Welsh Basin the eastward transgression flooded the western margins of the Midland Platform, creating a marine shelf on which benthic organisms flourished. The transgressive sea reached the Church Stretton area of South Shropshire in mid-Llandovery times; the first deposits were commonly conglomeratic, followed by shales and thin limestones referred to the Pentamerus Beds.

Exposures of the Pentamerus Beds on the hillside to the west of Hillend Farm form part of the outcrop of this formation that borders the southern and south-eastern margins of the Long Mynd (Figure 3.4). Whittard (1932) recognized two lithological phases within the Pentamerus Beds of this area, a lower arenaceous unit and an upper mudstone unit. The outcrop of the arenaceous unit (Grits and Conglomerates of Greig *et al.,* 1968) is discontinuous and irregular, with a thickness of up to 20 m, according to Ziegler *et al.* (1968b), or up to 55 m, according to Greig *et al.* (1968). In contrast, there is a continuous outcrop of the mudstone unit (Shales and Limestones of Greig *et al.,*1968) from Plowden [SO 382 874] to Little Stretton [SO 445 921] and probably northwards to Church Stretton (Greig *et al.,* 1968). In places, the arenaceous beds are absent and the mudstones rest directly on the Longmyndian (Precambrian) strata.

Whittard (1932) used detailed mapping of the exposures of Pentamerus Beds in this area to trace the unconformity between the Longmyndian rocks of the Long Mynd and the basal deposits of the Llandovery transgression. The exposures at and around the Hillend Farm locality form an important part of the evidence for the position and nature of the mid-Llandovery shoreline in this area, and also provide representative evidence of the sediments and biota of the Aeronian strata of this part of the classic region of South Shropshire.

Description

The road cutting west of Hillend Farm, on the north side of the A489, exposes typical mudstones and thin limestones of the Pentamerus Beds; the basal arenaceous beds, comprising coarse sandstones and conglomerates, are exposed in the hillside above (Greig *et al.,* 1968, p. 164), where they occasionally contain specimens of the brachiopod *Lingula.* Strata of the Pentamerus Beds can also be seen in a small old quarry behind the road cutting.

Some 5 m of mudstones are exposed in the road cutting and the old quarry, striking at 075° and dipping 25°S. The mudstones are grey, weathering to buff, with sphaeroidal weathering evident in the more homogeneous horizons. Several discontinuous bands of argillaceous limestone are interbedded with the mudstone (Figure 3.5), (Figure 3.6) and are characterized by abundant transported shells of *Pentamerus oblongus* and other brachiopods. The mudstones also contain diverse brachiopods (especially *Coolinia*), together with gastropods, tentaculitids, corals, bryozoans, orthocone cephalopods, the invading sea, with inlet gulfs, embayments, channels and sea stacks. He interpreted the conglomerates and sandstones at the base of the Pentamerus Beds as beach, bar and pebble-bank deposits irregularly distributed along this coastline. This interpretation is supported by the recognition of a shallow-water *Lingula* benthic community in these rocks (Ziegler *et al.,* 1968b). From a more detailed sedimentological study, Bridges (1975) considered the coarser, immature sandstones and conglomerates to represent stream derived material accreted on beaches near river mouths, while the mature quartz sands compare with those deposited on modern wave-cut platforms.

A deepening of the sea is indicated by the development of a *Pentamerus* Community in the overlying mudstones (Ziegler *et al.,* 1968b). This community is represented in both the shale and limestone lithologies, but in the limestone coquinas the shells are clearly disoriented and crinoid columnals and the trilobite *Encrinurus.* Ziegler *et al.* (1968b) assigned the fauna to the *Pentamerus* benthic community (Figure 3.7) and reported the occurrence of *Eocoelia hemisphaerica,* indicative of an Aeronian age. Conodont elements occur in small numbers in the limestone bands, representing a diverse

fauna characterized by *Pranognathus tenuis, Icriodella deflecta, Kockelella abrupta, Ozarkodina bassi* and *O. oldhamensis* (Aldridge, 1972; Aldridge and Smith, 1985); the road cutting is the type locality for the stratigraphically important conodont species *Pranognathus tenuis* (Aldridge, 1972). The mudstones also contain a rich and well-preserved microflora, which has yet to be studied.

Interpretation

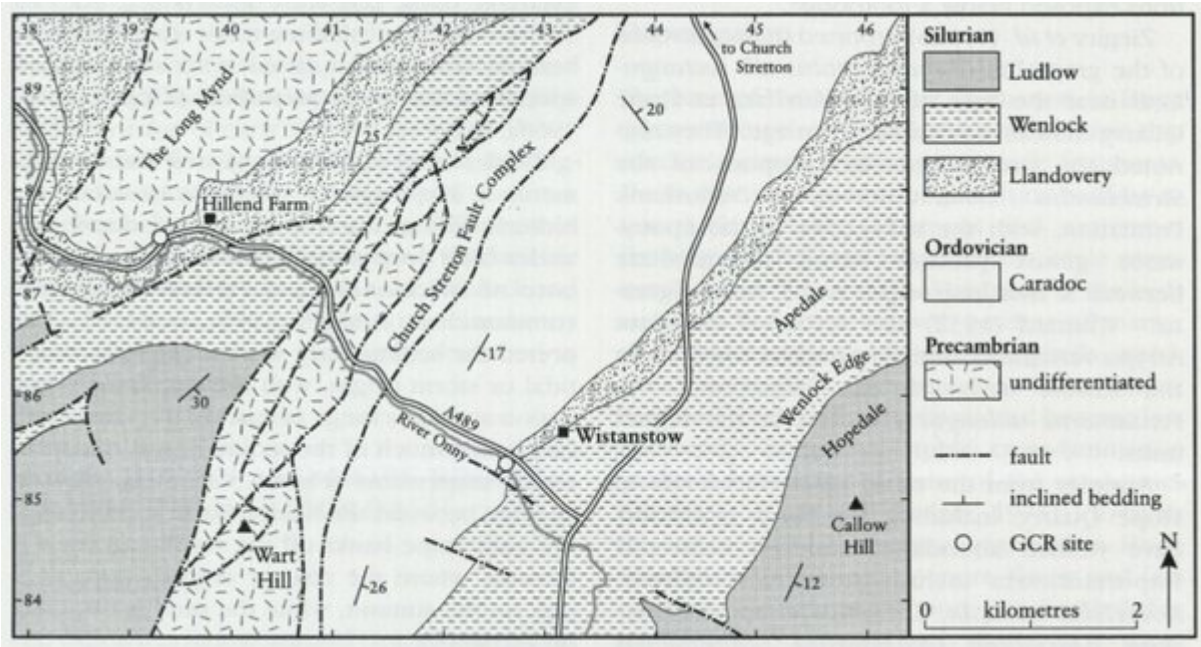
During the Aeronian age, the sea advanced eastwards from the Welsh Basin, flooding the borderlands. At this time, the Long Mynd remained emergent, forming a southward facing peninsula (Bridges, 1975). Detailed mapping of the Silurian/Longmyndian unconformity led Whittard (1932) to conclude that the flanks of the Long Mynd presented an intricate coastline to have been transported. Bridges (1975) considered that the muds built up on the sheltered eastern side of the Long Mynd, with the majority of the coquinas deposited by bedload transport, possibly during storms.

This site relates to the GCR site at Hope Quarry to the north-west, where Aeronian rocks lie unconformably on Upper Ordovician strata, and to the site at Wistanstow to the east, where younger (Telychian) strata also rest directly on shales of Upper Ordovician age. Another related site is at Gullet Quarry in the Malvern Hills, where Telychian shoreline deposits of the Llandovery transgression are also exposed. Together these sites enable interpretation of the pattern and nature of the transgressive events along the western margin of the Midland Platform during the middle and late Llandovery.

Conclusions

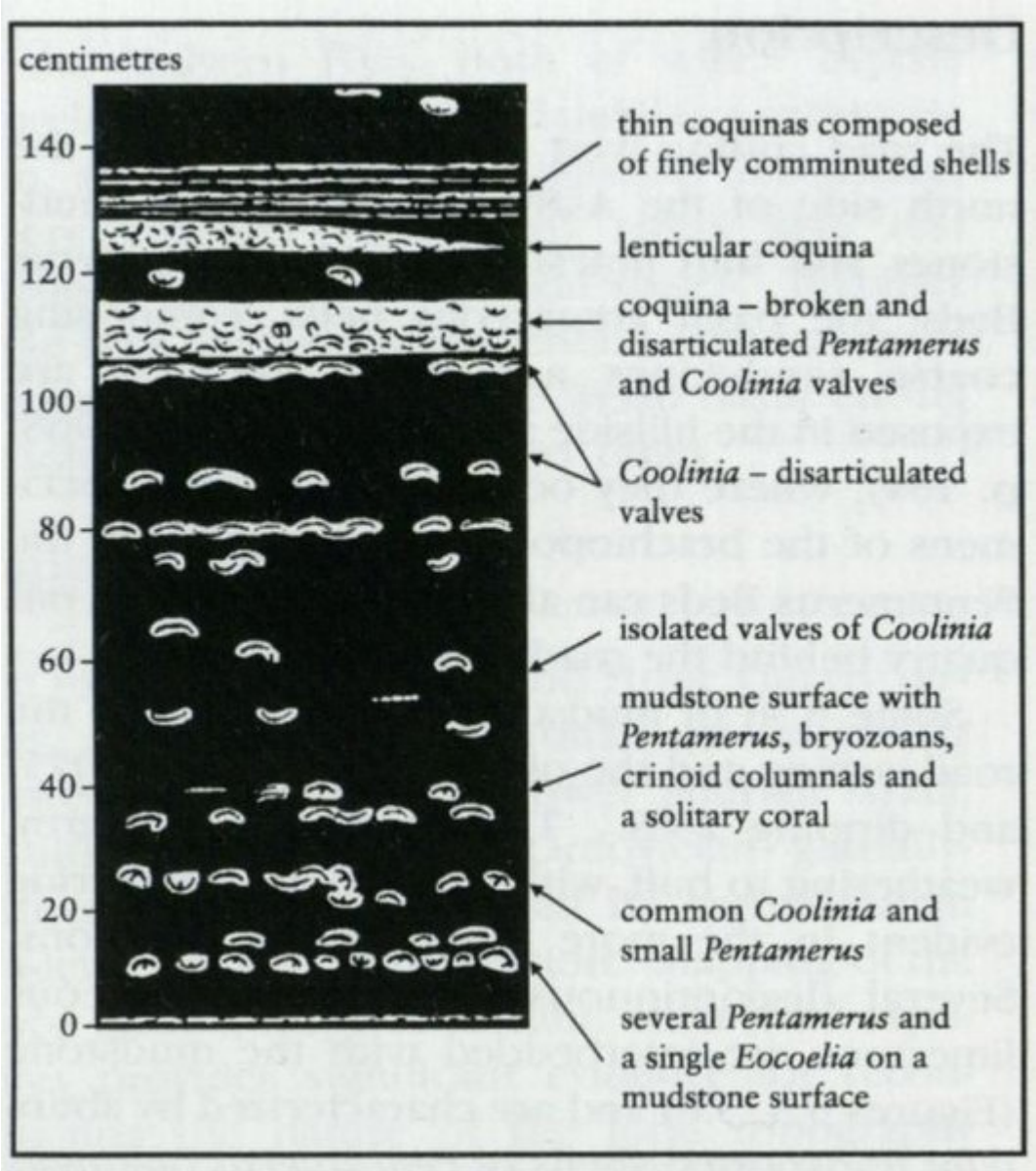
The exposures in the vicinity of the road cutting west of Hillend Farm display typical facies of the arenaceous and mudstone phases of the Pentamerus Beds. The irregular unconformity between the Silurian and the Longmyndian can be mapped in the hillside and demonstrates the nature of the coastline in this area at the time of the Aeronian transgression. These exposures are particularly instructive in showing the development of sedimentary facies and the nature of colonizing faunas during this transgressive event. The conservation of this site is important, as it provides a representative section in local mid-Llandovery sediments with typical fossils, and in conjunction with other sites it preserves fundamental evidence of the development of the Llandovery transgression across the western flanks of the Midland Platform.

References

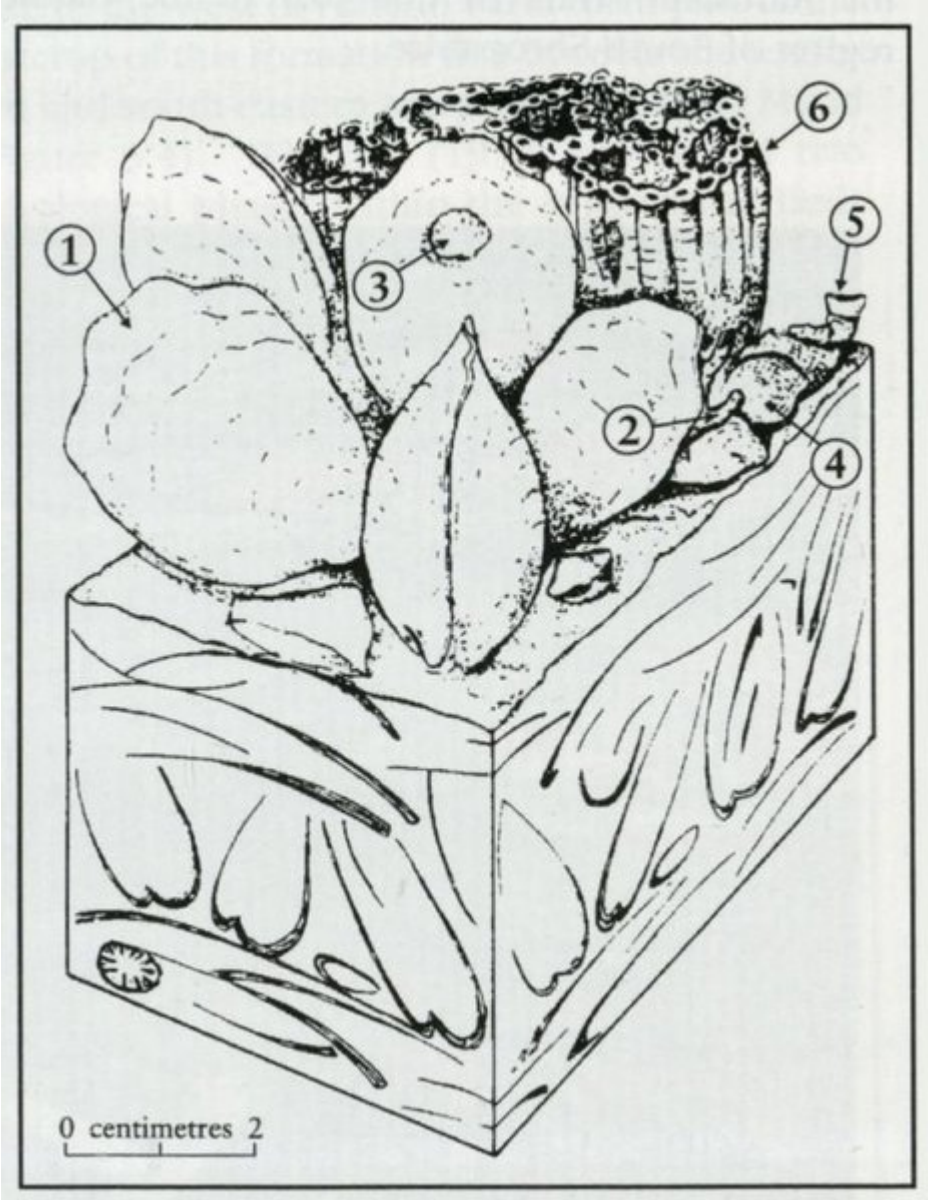


(Figure 3.4) Geological map of the area to the south-east of the Long Mynd, Shropshire, showing the sites at Hillend Farm and Wistanstow (modified after Siveter et al., 1989).

(Figure 3.5) Mudstones of the Pentamerus Beds at the road cutting near Hillend Farm; a thin limestone lens rich in Pentamerus shells is exposed above the hammer head (arrowed). (Photo: R.J. Aldridge.)



(Figure 3.6) Representative sedimentary log through the mudstones and thin limestones of the Pentamerus Beds at Hillend Farm (after Bridges, 1975).



(Figure 3.7) Reconstruction of the Pentamerus benthic community, based on a collection from the Pentamerus Beds of Shropshire (after Ziegler et al., 1968a). The fossils represented are: (1) Pentamerus oblongus; (2) a bryozoan; (3) Eocoelia hemisphaerica; (4) Atrypa reticularis; (5) a rugose coral; (6) Halysites sp..