Mylet Road

[SN 269 144]–[SN 272 145]

Introduction

This locality is of historical importance for showing the stratigraphical and zonal relationships around the Caradoc–Ashgill boundary in South Wales. The exposure is, however, less good than the more recently exposed section at Pengawse Hill, near Whitland.

The Mylet Road section shows one of the best tectonically-undisturbed sections through the upper part of the Mydrim Shales in their entire area of outcrop, together with the lower part of the overlying Sholeshook Limestone Formation. It was described initially by Cantrill (in Strahan *et al.,* 1909, p. 51, 56), and later by Price (1973a, p. 234), who recognized the presence there of the trinucleid trilobite *Tretaspis moeldenensis moeldenensis* Cave in the basal Sholeshook Limestone, giving an important age datum to this horizon. The type locality for this stratigraphically significant trilobite is about 800 m to the ESE [SN 2758 1424] at Moldin (Cave, 1960), where it occurs at the same horizon in the lowermost Sholeshook Limestone Formation (see also Price, 1973a, p. 234, locality 25). Price's (1973a) work on the trilobite faunas of the Sholeshook Limestone Formation has enabled its base to be correlated firmly with the early Cautleyan here; there has, however, been no modern assessment of the graptolite faunas of the underlying Mydrim Shales, although Cave (1960, p. 334) compared the graptolites of the highest beds to those of the Nod Glas in the Welshpool district, and on this basis suggested an Onnian age for them. Thus Price (1973a, p. 243) proposed that there was a hiatus beneath the base of the Sholeshook Limestone embracing part of the Onnian Stage, the Pusgillian Stage and part of Zone 1 of the Cautleyan Stage. Cantrill (in Strahan *et* al. 1909, p. 51) has also noted that the graptolites at the top of the Mydrim Shales indicate the base of the *Pleurograptus linearis* Zone, which level correlates broadly with the mid-Onnian Stage.

A new section that has become available only in recent years lies a few kilometres to the west, at Pengawse Hill, west of Whitland (Figure 8.20). There, essentially the same sequence as is seen at Mylet Road is exposed, but more completely. A preliminary report on the biostratigraphy of this section, including a range-chart of the graptolites, was given by Zalasiewicz *et al.* (1995). They demonstrated a continuous passage from the Mydrim Shales into the Sholeshook Limestone and, on the basis of graptolite and trilobite faunas, inferred that there is no late Caradoc—early Ashgill hiatus. The same situation is likely to obtain also at Mylet Road.

Description

The oldest horizons seen in the Mylet Road section crop out in an old roadside quarry [SN 2694 1439] on the south side of the road 350 m southwest of Mylet. Black shales dip a little west of south at 45° and are affected by a nearly horizontal cleavage. They have yielded *Deplograptus* species and are attributed to the *Mesograptus* Beds' of Strahan *et al.* (1914), although without a reappraisal of the graptolites their biostratigraphical correlation is unclear. Some 150 m south-west along the road from the quarry [SN 2681 1435] there is a bed full of the graptolite *Dicellograptus morrisi* Hopkinson, a species reported by Zalasiewicz *et al.* (1995, p. 614) at a similar (and probably correlative) level at Pengawse Hill. To the south-west, on the southeast side of the road [SN 2681 1431], between 24 m and 27 m below the base of the Sholeshook Limestone, there is a 3.6 m-thick unit of black, yellow-weathering shales alternating with thin calcareous bands from 5 cm to 30 cm thick, one of which is rich in ostracods.

The topmost beds of the Mydrim Shales are sandy and pale-weathering and may have been calcareous (Cantrill, in Strahan *et al.,* 1909, p. 51), with the highest graptolite-bearing horizons at 3 m below the base of the Sholeshook Limestone, the lowest 8 m of which is represented by hard, calcareous mudstones. The passage upwards from the Mydrim Shales is gradual, and Cantrill (in Strahan *et at,* 1909, p. 56) took the base of the Sholeshook Limestone at the bottom of the lower of two horizons of black phosphatic nodules. The horizons are about 15 to 20 cm thick and about 3.5 m apart, the nodules ranging from 1.5 cm to 9 cm in diameter. Price (1973a, p. 234) placed the base of the limestone lower than Cantrill, at 2 m below the lower band of nodules. He noted that there were traces of phosphatization

throughout the basal 2 m of the Sholeshook Limestone. The lowest part of the formation is exposed around [SN 2680 1424], where *Tretaspis moeldenensis moeldenensis* Cave occurs 5–6 m above the base. Above 9 m it is replaced by *Tretaspis* cf. *radialis* Lamont. Other trilobite taxa occurring with *T. moeldenensis moeldenensis,* such as *Ceraurinella intermedia* (Kielan) and *Encrinuroides sexcostatus* (Salter), range higher in this section and elsewhere (Price, 1973a, table 4). The calcareous mudstones exposed at Moldin [SN 2758 1424] appear to correlate with a horizon between the phosphatic nodule bands exposed in the road section, probably about 4–5 m above the base of the Sholeshook Limestone Formation (Price, 1973a, p. 234). The top of the Sholeshook Limestone is not exposed at Mylet but can be seen at Pengawse Hill; there it includes an upward passage into the Slade and Redhill Mudstone Formation, which has yielded a rich bryozoan fauna (Buttler, 1991; cf. (Figure 8.23)b). The upper limit of the Sholeshook Limestone is seen also at Robeston Wathen and Sholeshook (see site reports).

Interpretation

Zalasiewicz *et al.* (1995, p. 613) showed that, at Pengawse Hill, Whitland, there is a continuous and gradual passage from the Mydrim Shales into the Sholeshook Limestone (Figure 8.20) and presented biostratigraphical evidence to demonstrate that there is no break in the sequence, as had formerly been supposed (e.g. Price, 1973a). From graptolite evidence they proved the presence of both divisions of the *clingani* Zone (*caudatus* Subzone below and *morrisi* Subzone above) and inferred an equivalent to the *linearis* Zone (their *Normalograptus* proliferation interval'), and reported *Tretaspis* cf. *moeldenensis moeldenensis* from the basal Sholeshook Limestone. The pit-count on the fringe of the latter is similar to that of the lower Pusgillian taxon *T. moeldenensis colliquia* Ingham, suggesting a Pusgillian age for the base of the Sholeshook Limestone at Pengawse, thus possibly slightly older than at Mylet Road and elsewhere (Zalasiewicz *et al.,* 1995, p. 615). Because the section at Mylet Road shows an apparent continuous passage upwards from the Mydrim Shales, by analogy with Whitland there is likely to be no stratigraphical gap. New work on the graptolite faunas of the Mydrim Shales at Mylet Road, and also on those from elsewhere, is needed to establish whether locally (e.g. at Sholeshook — see site report) there is a hiatus.

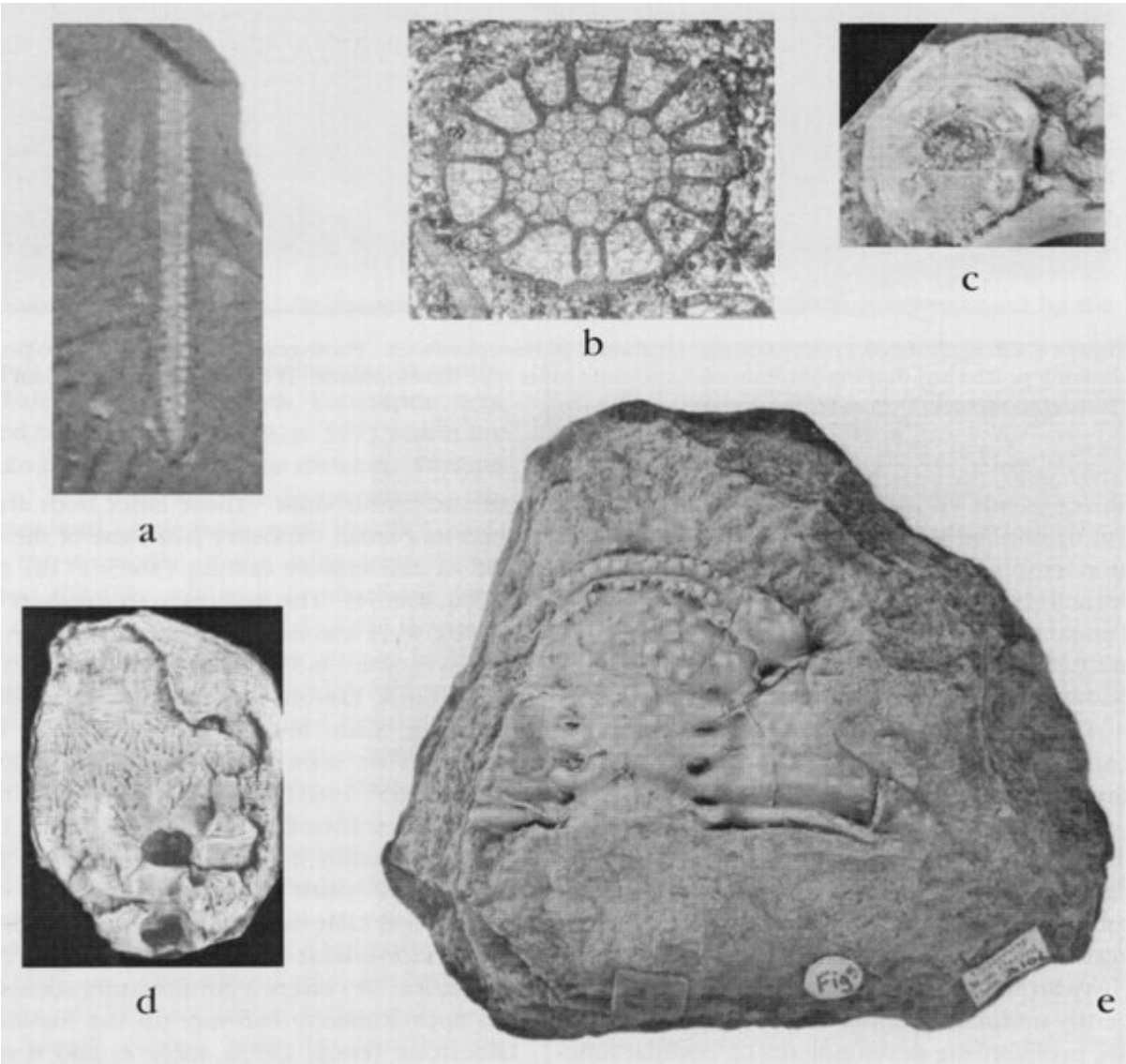
The Mydrim Shales are thought to have been deposited under dysaerobic bottom-conditions (Temple and Cave, 1992; Zalasiewicz *et al.,* 1995) from a sea with high surface productivity that supported a diverse graptolite fauna. Upwards there is a reduction in diversity, which seems to be related to decreasing water depth and perhaps lowered temperatures; the onset of carbonate-rich sediments of the Sholeshook Limestone may be linked to both t[S]hese factors (Zalasiewicz *et al.,* 1995).

Conclusions

Mylet Road is important in exposing the Mydrim Shales–Sholeshook Limestone transition; it also shows a biostratigraphically significant succession of *Tretaspis* species. Pengawse Hill, near Whitland, offers a much more complete and better-exposed section, but as yet it is unstudied in full. The Mylet Road section should therefore be used in tandem with that at Whitland.

References

(Figure 8.20) Road section at Pengawse Hill, west of Whitland. Black Mydrim Shales dipping uphill are overlain conformably by paler Sholeshook Limestone. The transition is marked by alternations of shale with layers of cal-creous nodules and thin beds of limestone. (Photo: J.A. Zalasiewicz.)



(Figure 8.23) (a) Normalograptus sp., x 3, a typical graptolite that proliferates in the upper beds of the Mydrim Shales at Pengawse Hill. (b) Transverse section of the bryozoan Kuckersella borealis (Bassler), x30, Slade and Redhill Beds, Pengawse Hill. (c) Eucystis pentax Paul, x4, Sholeshook Limestone, Sholeshook. (d) Archegocystis stellulifera (Salter), x2, Sholeshook Limestone, Sholeshook. (e) Atractopyge verrucosa (Coalman), holotype cranidium, x1.5, from the Crûg Limestone, Crûg.