
Hay Head Quarries

[SP 048 985]

Introduction

The Wenlock rocks of the Silurian inlier of the Walsall area comprise the Coalbrookdale and the Much Wenlock Limestone formations (Bassett, 1974a). Within the lower part of the Coalbrookdale Formation of the Great Barr district to the east of the town there is a discrete carbonate development, the Barr Limestone, which is unique to the inlier. This limestone unit forms the basis of the present site, being formerly mined opencast in the NE–SW line of workings known as Hay Head Quarries. These are mainly located just to the north of the B4151 road from Walsall to Sutton, in which patch of ground the site is contained, but the excavations also continue to the south of this road, towards Daisy Bank [SP 040 977].

E Jukes (1829), with Sowerby, appears to have been the first to describe fossils from Hay Head, drawing attention to the 'Barr trilobite' and the large orthoconic nautiloids. Murchison (1839) discussed the limestone at Hay Head and formally established the 'Barr trilobite' as *Bumastus barriensis*. J.B. Jukes (1853, 1859) described the limestone and listed the fossils in his surveys of the South Staffordshire Coalfield. The best account available of the geology, fossils and exposures of the Barr Limestone is that of Cantrill (1919). The limestone was also commented on by Lapworth (1889a), Eastwood *et al.* (1925), Whitehead and Eastwood (1927), Butler (1937) and Bassett (1974a, 1977), the last author giving it formal member status within the Coalbrookdale Formation.

Description

The lower Wenlock Barr Limestone Member has a maximum thickness of 9–10 m in the Walsall district (Cantrill, 1919; Butler, 1937), of which only the top 4–5 m are now available (Bassett, 1974a). The best exposures at present in this series of very low quarries are in the north of the outcrop, about 350 m SSE of Aldridge Lodge in the area called 'The Dingle' [SP 052 991], and take the form of small bank and streamside sections. Lithologically, the unit consists of grey and olive, calcareous, blocky and flaggy-bedded shales and siltstones with intercalating layers of limestone nodules. The carbonate bands are 7–25 cm thick and individual nodules have blue-grey centres weathering to buff-coloured. Within that part of the member presently exposed there are three bentonite horizons, the lower two being 2.5 cm thick and the upper one 15 cm (Bassett, 1974a). In the borehole sunk through Silurian strata in Walsall town, four bentonites were recorded from the Barr Limestone (Butler, 1937), but these cannot be matched with the Hay Head examples due to differences in their thicknesses and also those of the intervening shales.

North of the B4151 road to Sutton, the Barr Limestone dips gently at 10° or so to the northwest. South of this road, on the eastern side of 'The Spinney' [SP 045 980], it has been recorded by Cantrill (1919) as dipping ESE. In the gully that continues the line of workings from The Spinney to the south-west, Cantrill also noted calcareous mudstones of the Coalbrookdale Formation overlying the Barr Limestone and dipping to the north-west at 8–10°, whilst farther to the south-east in the gully these beds flatten out and then turn over the axis of a gentle anticline to dip south-east at 8°. It is difficult now to find evidence of these exposures.

The faunal list from the Barr Limestone given by Cantrill (1919) includes brachiopods, corals, orthocones and trilobites. Bassett (1974a) noted the presence of *Dicoelosia biloba* and *Leangella segmentum* from Hay Head, the locality; additionally, being listed (Bassett, 1970a) as one of those providing material for his monographic studies (1970–1977). Of the trilobites from here, in relatively recent times Lane and Thomas (1978) have fully revised *Bumastus barriensis* (see (Figure 4.2)), Thomas (1978) has established *Proetus (Lacunoporaspis) oppidanus*, and Siveter (1996) has figured material of *Calymene neotuberculata ludicra*. The limestone provides an abundant conodont fauna, Aldridge (in Bassett 1974a, 1985) recording the following species from Hay Head: *Kockelella walliseri*, *Ozarkodina excavata*, *Panderodus unicostatus* and *Oulodus* sp.. Other microfossils include ostracods, both palaeocope and non-palaeocope, the locality producing specimens for the studies of Siveter (1978, 1980) and Lundin *et al.* (1991), including type material.

Interpretation

In the older literature (e.g. Cantrill, 1919; Eastwood *et al.*, 1925) the Barr Limestone Member was regarded as more or less equivalent to and coeval with the basal Wenlock Woolhope Limestone Formation of the Welsh Borderland Silurian inliers of Woolhope, Malvern and May Hill to the south-west. Bassett (1974a) subsequently refined the age of the Barr Limestone based on the graptolite faunas from the Walsall borehole identified by Elles (in Butler, 1937). He suggested that the occurrence of *murchisoni* Biozone faunas in the mudstones of the Coalbrookdale Formation some 9.5 m below the limestone indicated that the limestone itself was specifically of *riccartonensis* Biozone age and thus not basal Wenlock. The *centrifugus* Biozone was not proven in the borehole, but Bassett considered it to be probably represented by the 13 m of core that lie between the *murchisoni* Biozone strata and the purple sediments he (and Ziegler *et al.*, 1968b) regarded as Llandovery in age. In the correlation chart of Cocks *et al.* (1992) the Barr Limestone Member is given as coinciding with the top of the *murchisoni* and the bottom of the *riccartonensis* biozones, and slightly overlapping in age with the topmost part of the Woolhope Limestone Formation.

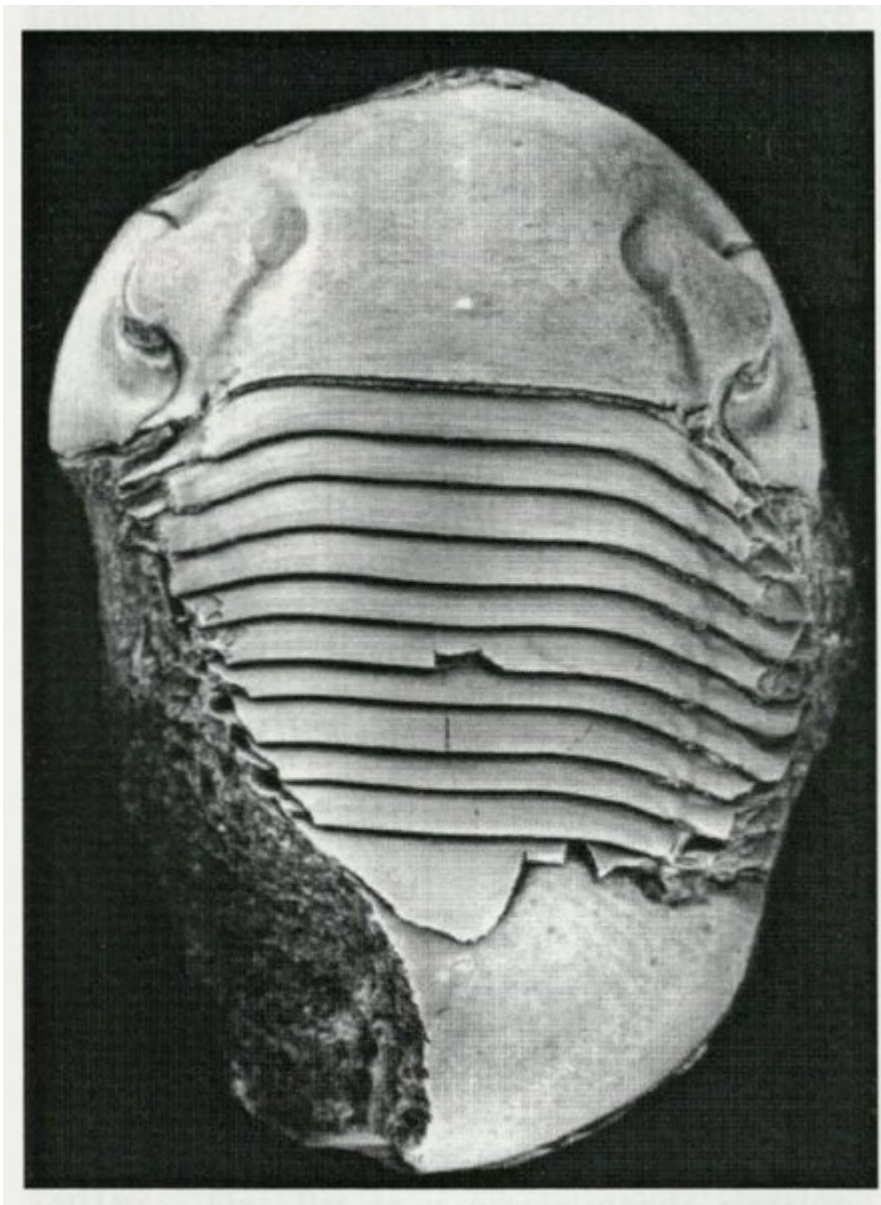
The Barr Limestone formed on the western margin of the land area presumed to exist at this time, the Midland Platform. On the facies/palaeogeographical reconstruction for the early Wenlock of Bassett (1974a), the Walsall area is given as one of offshore calcareous (lower Coalbrookdale Formation) muds at the time of deposition of the Woolhope Limestone Formation, thus reflecting his conclusion on the slight age difference between this unit and the Barr Limestone. Hurst *et al.* (1978) suggested that the Barr Limestone area of carbonate deposition may have been in contact with those of the southern inliers (Woolhope Limestone Formation) and the Dolyhir area (Dolyhir and Nash Scar Limestone Formation) to the southwest during *murchisoni* Biozone times. Holland (1992) also appeared to indicate some contemporaneity of limestone deposition between the Walsall area (Barr Limestone), the southern inliers and the Dolyhir area in *riccartonensis* Biozone times, but lateral continuity of deposition during this time only between the first two of these.

The Hay Head site, stratigraphically, prefaces the nearby Daw End site in the Walsall Silurian inlier, which exposes the upper part of the Coalbrookdale Formation and the basal part of the Much Wenlock Limestone Formation. In terms of sites of approximately coeval carbonate facies and palaeogeographically related sites, the Barr Limestone Member of Hay Head Quarries can be broadly compared in particular to the Woolhope Limestone Formation of the Scutterdine Quarry site in the Woolhope Inlier, and to a much lesser extent to the Dolyhir and Nash Scar Limestone Formation of the Dolyhir Quarries site in the Old Radnor area.

Conclusions

Hay Head Quarries are important in displaying a significant carbonate development, the Barr Limestone Member of the Coalbrookdale Formation, which is found only in the Silurian inlier of the Walsall area. Together with the adjacent Daw End site, this site provides a fairly complete facies and stratigraphical coverage through the Walsall Silurian inlier. Fossils from here have been used since the early to mid-19th century for systematic and dating purposes and it forms the type locality for various taxa. It is used for research purposes on a national basis.

[References](#)



(Figure 4.2) The 'Barr Trilobite', *Bumastus barriensis* Murchison, 1839, from the Barr Limestone Member, Coalbrookdale Formation, Wenlock Series, Hay Head Quarries, Walsall area, West Midlands. Lectotype, British Geological Survey specimen (GSM 54421); dorsal view, x 0.8; figured by Jukes (1829), Salter (1849, 1867) and Lane and Thomas in Thomas (1978). (Photo: P.D. Lane.)