
Loch Awe Quarry

[NC 250 158]

Introduction

The quarry at Loch Awe has yielded the most prolific trilobite fauna of the Fucoïd Beds Member of the An t-Sròn Formation and is the type locality for one species, *Olenellus hamoculus*, which has been made the type species of the subgenus *Olenellus* (*Angustolenellus*) Palmer and Repina.

The sequence of rocks from quartzites to limestones has long been recognized in the Assynt area (e.g. Macculloch, 1836), although the first recognition of the Fucoïd Beds as a separate unit was by Cunningham (1841). Nicol (1857), who examined the strata in the Loch Assynt region, recorded brown shale-like beds, with what appeared to be fucoïd (seaweed) impressions, though today these are considered to be *Planolites* burrows. These, the Fucoïd Beds Member of the An t-Sròn Formation, provide an important marker band in the stratigraphical sequence in the north-west Highlands of Scotland and are invaluable for mapping purposes. The biostratigraphically vital *Olenellus* fauna, indicative of a Lower Cambrian age, was detected by the Geological Survey at several localities (Peach *et al.*, 1907, p. 628). Generally trilobites are rare and difficult to collect; however, while Bowie *et al.* (1966) were conducting research on the potash content of the Fucoïd Beds, Brand (1965) found that beds at Loch Awe Quarry yield large numbers of *Olenellus*, which were described by Cowie and McNamara (1978).

Description

Loch Awe Quarry, situated by the road south of Inchnadamph, exposes about 7–8 m of the Fucoïd Beds Member dipping WSW at about 30° (Figure 12.12). The Fucoïd Beds generally consist of dolomitic siltstones, with some dolomitic sandstones and shales, carbonates and rare pisolitic ironstones. The lower part of the face at the back of the quarry shows 3–5 m of relatively massive strata, consisting of dolomitic siltstones and sandstones that are thickly bedded and weather brown. Calcite veins are common on joint surfaces. The sandstones and siltstones are generally a few centimetres thick and show sedimentary structures such as parallel lamination, cross-lamination and occasional wave rip-pies. Structureless, unlaminated mudstones are intercalated. Bioturbation is common, and both vertical burrows and horizontal *Planolites* burrows occur throughout. A few coarser sandstones show sharp erosive bases. Above the massive beds are 2–3 m of shalier strata, consisting of dark-grey dolomitic siltstones and shales with little internal structure. They break with a conchoidal fracture and contain occasional thin laminae of siltstone and fine sandstone.

This site has yielded a large number of trilobites from various horizons, the best-preserved specimens coming from an unbedded mudstone unit some 1.5 m above the top of the calcareous portion of the Fucoïd Beds that forms the main mass of the quarry. The dominant species is *Olenellus reticulatus* Peach (Cowie and McNamara, 1978, p. 625), with rarer *O. lapworthi* Peach and Horne and a few specimens of *O. hamoculus* Cowie and McNamara, for which this is the type and only known locality. The trilobites indicate the *Bonnia–Olenellus* Zone of late Lower Cambrian age, as discussed under Fuaran Mor (see site report). Hyolithids, echinoderm fragments (McKie and Donovan, 1992) and inarticulate brachiopods also occur. Faunal details can be found in Brand (1965), Cowie (1974) and Cowie and McNamara (1978).

Interpretation

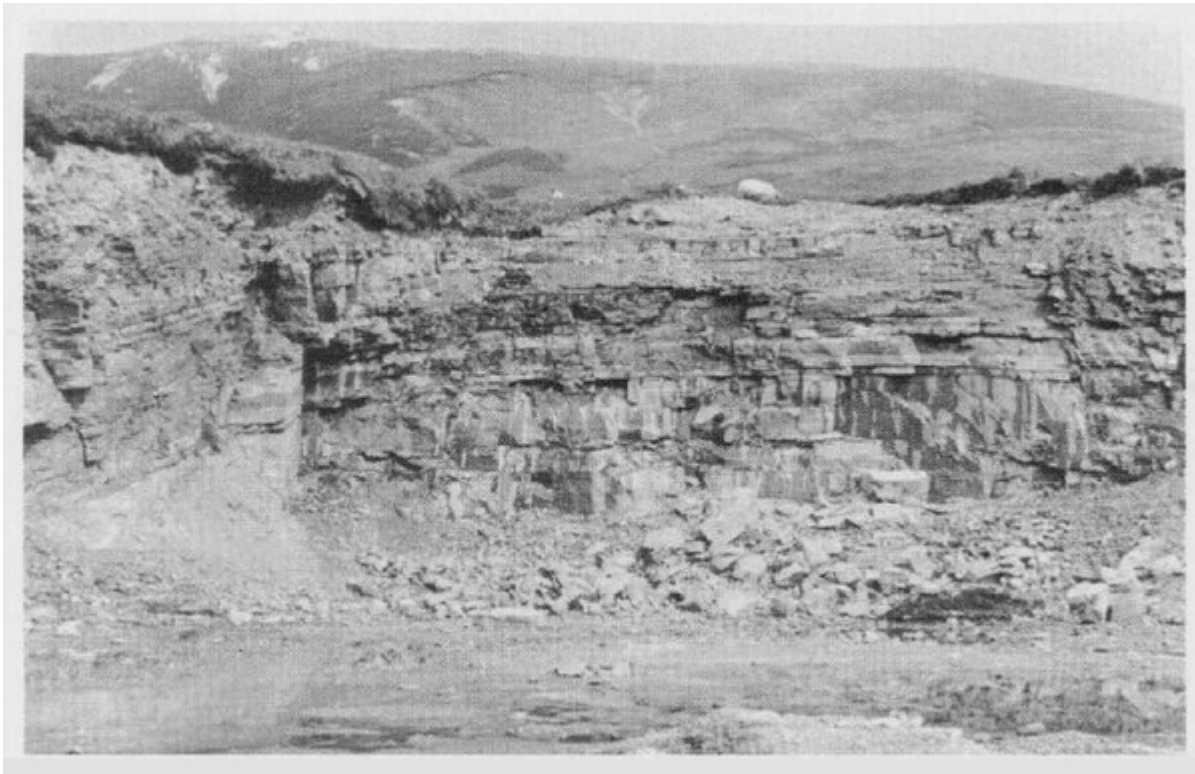
The conditions of deposition of the Fucoïd Beds are discussed under Fuaran Mor (see site report). The species of *Olenellus* described by Peach and Horne (1892) and Peach (1894) were based on few specimens, and it is evident from the discussion in Lake (1906–1946, pp. 238–44) that distinction among them was a matter of uncertainty. The large number of cranidia obtained from Loch Awe Quarry (more than 100 specimens of *O. reticulatus*) enabled Cowie and McNamara (1978) to describe the variation within the species of *Olenellus* and hence to delimit the species, including their new species *O. hamoculus*, with greater clarity.

Potash-rich beds are widespread on the western margin of the Iapetus Ocean. Bowie *et al.* (1966) suggested that the potash in the Fucoïd Beds originated from a volcanic source in the underlying Precambrian rocks. However, Swett (1969) pointed to a general lack of volcanic sources in both the Lewisian and the Torridonian and suggested instead that potassium was released during dolomitization from illite, which is present in the overlying limestones.

Conclusions

Loch Awe Quarry is important palaeontologically, in that it exposes a fossiliferous bed that yields the trilobite *Olenellus* in exceptional abundance, enabling the study of populations of this genus. They are much the most useful fossils for dating the lower part of the north-west Highlands of Scotland as of Early Cambrian age and enable correlation with areas in Greenland, Canada and Spitsbergen.

[References](#)



(Figure 12.12) Loch Awe Quarry, showing the Fucoïd Beds Member. The lower beds, massive dolomitic sandstones, are overlain by thinly bedded units which include fossiliferous beds with *Olenellus* (Photo: British Geological Survey photographic collection, D1284.)