Weydale Quarry

[ND 146 654]

Highlights

The fossil fishes from Weydale Quarry are mainly of small forms, and the preservation of detail is excellent. The small sarcopterygian *Osteolepis* is common.

Introduction

Weydale Quarry, Caithness (Highland), exposes Middle Devonian lacustrine flagstones. Crampton and Carruthers (1914, pp. 66–7) state that the pale-weathering beds of the 'Thurso Flagstone Group' (as seen at Weydale), represent rock underlying a wide tract of country in Caithness, and are equivalent to the lowest rocks of the Thurso coast.

Description

Weydale Quarry is a long rock face the stratigraphical position of which is unclear, as the area is obscured by thick deposits of drift, but it must expose either the upper part of the Ham–Skarfskerry Subgroup, or the lower part of the Mey Subgroup of the Upper Caithness Flagstone Group (Donovan *et al.,* 1974). Miles and Westoll (1963) used fossils and the regional dip to place the flagstones in Weydale Quarry about 1250 ft (400 m) above those at Achanarras. The fauna suggests that these beds belong to Fish Zone 5 of Donovan *et al.* (1974), as at Holburn Head Quarry (q.v.).

A faulted outcrop of fish bed, exposed at the northern end of Weydale Quarry, consists of 1.3 m of fish-bearing laminites, the upper and lower portions of which contain mainly fragmentary material, with a central 360 mm of light-grey calcareous laminite that yields complete fishes. Underlying the fish bed are 3 m or more of flagstones with subaqueous shrinkage cracks (Donovan and Foster, 1972). The upper part of the fish bed shows an increase in elastic sedimentation, paralleled by increased fragmentation of fish specimens, and is topped by a thin (60 mm) calcareous laminated siltstone. The thin siltstone has been overturned and disrupted and has an irregular base upon the fish-bearing laminites. These features may have been produced either by bedding-plane slip prior to consolidation, possibly induced by seismic activity as suggested by Trewin (1986) for similar structures at Achanarras Quarry, or they may have been dragged over by turbidity currents.

Fauna

Acanthodii: Acanthodida: Acanthodidae

acanthodian indet.

Placodermi: Arthrodira: Homosteidae

?Homosteus milleri Traquair, 1888

Osteichthyes: Sarcopterygii: Osteolepiformes: Osteolepididae

Osteolepis panderi (Pander, 1860)

Thursius pholidotus Traquair, 1888

Osteichthyes: Sarcopterygii: Dipnoi: Dipteridae

Dipterus cf. *valenciennesi* Sedgwick and Murchison, 1828

Most of the fishes occur in the central portion of the fish bed where calcareous laminites are developed. *Osteolepis panderi* is the most common species, but *Dipterus valenciennesi* also is abundant. *Osteolepis* occurs mainly within the central portion of the fish bed, and is most abundant in its upper portion. *Dipterus* also occurs most commonly within this bed. *Thursius* sp. was recorded by Saxon (1975), and commonly occurs as fragments throughout the whole fish bed. *Homosteus milleri* is the celebrated '*Asterolepis*' of Hugh Miller (1858). It occurs as large broken lumps of bone, which were once used in Caithness for fuel and would burn with a bright flame (Kinnear, 1893b).

Interpretation

It is likely that *Osteolepis panderi* had a limited geographical range, being known only from the Ham–Skarfskerry and Mey subgroups in northeastern Caithness and from equivalent strata in Orkney. Weydale and nearby Stonegun are the southernmost sites from which *O. panderi* has been found. The material from Weydale is well preserved, unlike that from Holburn Head Quarry (q.v.), where specimens are flattened and have lost fine detail.

Conclusion

The finds of *Osteolepis panderi* and *Dipterus valenciennesi* give Weydale Quarry its conservation value as they have been useful in anatomical and systematic work because of the good quality of preservation. The dating of the site is difficult, but the fish faunas may be of stratigraphical value.

References