

GRAPTOLITE EVIDENCE FOR THE AGE OF THE DUNQUIN GROUP (SILURIAN), DINGLE PENINSULA, COUNTY KERRY

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(Received 6 December 1993)

Abstract

The Dunquin Group is part of a Siluro-Devonian succession of sedimentary and volcanoclastic rocks that document the final stages of the closure of the Iapetus Ocean. Lower parts of the Dunquin Group have been dated as late Wenlock (Homerian) by their included brachiopod and coral faunas. A first graptolite find, *Monograptus flemingii warreni*, low in the Dunquin Group suggests a Homerian (*lundgreni* Biozone) age for this part of the succession.

Introduction

The late Silurian sediments of the Dingle Peninsula in south-western Ireland were deposited in a basin located on the southern margin of the Iapetus Suture zone. Sediment fill took place during the final convergence of Avalonia and Laurentia and the closure of the Iapetus Ocean (Todd *et al.* 1988). The oldest rocks in the Dingle Basin belong to the Dunquin Group (Wenlock and Ludlow age), and consist of marine and non-marine sediments interbedded with lavas and tuffs. These pass up into continental clastic sediments of the Dingle Group (late Ludlow to ?early Devonian age), in Lower Old Red Sandstone facies.

The lower parts of the Dunquin Group have been dated as late Wenlock (Homerian) on the basis of shelly fossils, and the upper part as Ludlow, also on the basis of shelly fossils, and on rare graptolites (Holland 1988). Hitherto,

graptolites have not been recorded from the postulated Wenlock-age sediments. The new specimen was collected by MJB during a field trip in April 1992. Repeated searches then, and again in March 1993, both times with large numbers of students, failed to turn up any more graptolites.

Location and stratigraphy

The graptolite described here was found at locality 1.1 of Sloan (1991b, pp 15–16, 27), locality A of Sloan and Williams (1991), and locality 38 of Holland (1988, p. 354), at grid reference Q324047. This is located low in the Ballincolla section of the Dunquin Group, on the south shore of Ferriter's Cove. The graptolite was found in the lower fossiliferous part of a mudstone–sandstone unit, near the base of Sloan's (1991b) sequence 1 (= sequence B in Sloan 1991a) at about the 35m level in the summary log in Sloan 1991b, p. 28. This unit

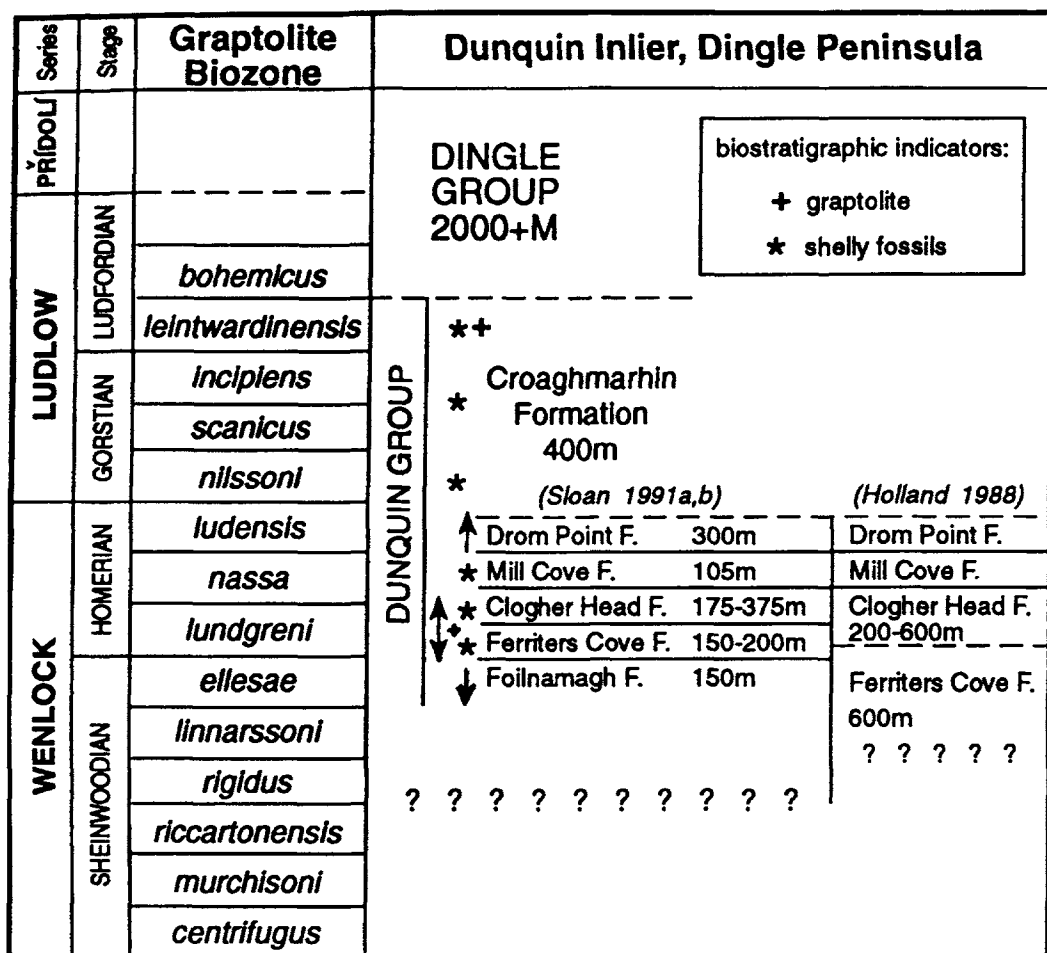


Fig. 1 — Correlation chart of the Dunquin Group with the standard graptolite biozones of the Wenlock and Ludlow series, showing the lithostratigraphical divisions, biostratigraphical tie points, and a comparison of the lithostratigraphic sequences of Sloan (1991a, b), Sloan and Williams (1991), and Holland (1988).

also contains scattered clasts of brachiopods, corals, bryozoans, and crinoids.

The Dunquin Group is divided into six formations, all defined lithologically (Fig. 1). The scheme of Sloan (1991a, b; Sloan and Williams 1991) differs from that of Holland (1987, 1988) and Cocks *et al.* (1992, p. 23) in that the lowest beds of the Dunquin Group, exposed to the north of Clogher Head, are termed the Foilnamagh Formation. These lowest sediments were ascribed to the Ferriter's Cove Formation by Holland (1969, 1987, 1988). Sloan (1991a, b; Sloan and Williams 1991) raised the lower and upper boundaries of the Ferriter's Cove Formation

sensu Holland (1987, 1988) higher in the sequence, as indicated in Fig. 1. The graptolite came from low in the Ferriter's Cove Formation of Sloan (1991a, b), and high in the Ferriter's Cove Formation of Holland (1987, 1988).

The graptolite and stratigraphic interpretation

The new graptolite from the Ferriter's Cove Formation is a 75mm-long distal portion of *Monograptus flemingii warreni* Burns and Rickards, 1993 (Bristol University Geology Department, BRSUG 25432; Fig. 2). Both the

thecal spacing and maximum width are constant throughout the length of the specimen, suggesting that it is from beyond the zone of stipe widening and therefore represents the distal portion of a large colony. The thecae are spaced at 9 per 10mm, which is within the size range of 7–12 per 10mm noted by Burns and Rickards (1993), and the maximum width of 3.0mm is also within the range for *M. f. warreni* of 2.0–4.4mm (Burns and Rickards 1993). The graptolite is preserved in low relief owing to a partial sediment infill, and the thecae possess the distinctive ‘beaked appearance’ frequently shown by *M. flemingi* when it is preserved in part-relief (as in Elles and Wood 1918, fig. 287b–d).

The graptolite is preserved in a grey micaceous siltstone. This is strongly bioturbated, although the only recognisable traces are occasional small (< 10mm) clusters of slender (< 1mm) *Chondrites* which cross-cut previously formed sedimentary structures. The only other

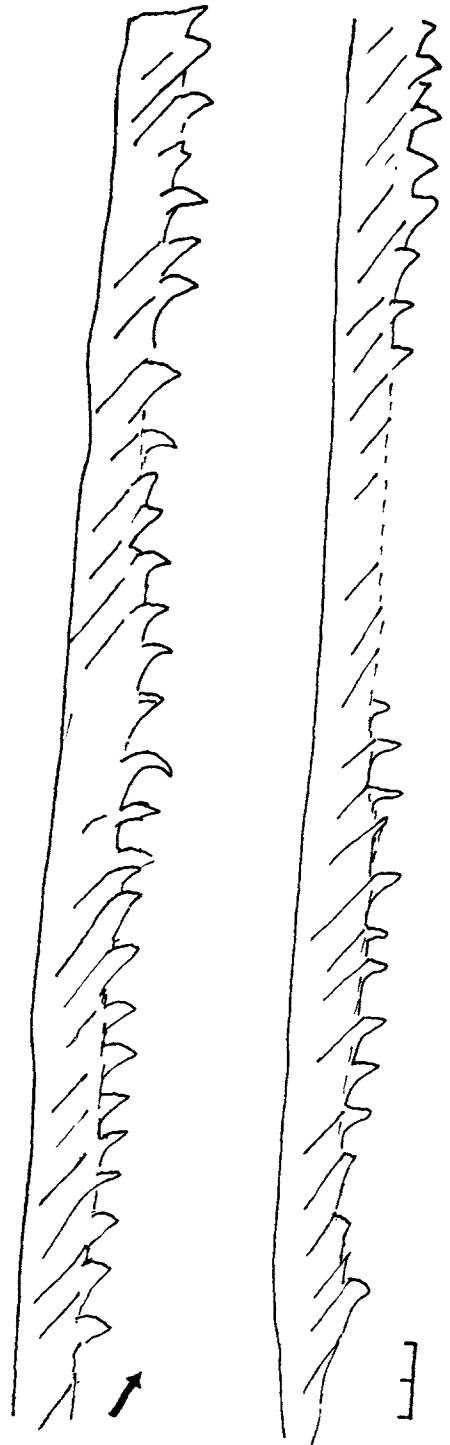


Fig. 3 — Camera lucida drawing of the graptolite *Monograptus flemingii warreni* (Salter) from low in the Ferriter’s Cove Formation, Dunquin Group, of Ferriter’s Cove, Ballincolla Township, Dingle Peninsula, County Kerry, Ireland (BRSUG 25432). Scale bar = 2mm.

Fig. 2 — General (a) and close-up (b) views of the graptolite *Monograptus flemingii warreni* (Salter) from low in the Ferriter’s Cove Formation, Dunquin Group, of Ferriter’s Cove, Ballincolla Township, Dingle Peninsula, County Kerry, Ireland (BRSUG 25432) ((a) $\times 1.0$; (b) $\times 2.5$).

fossils on the bedding plane with the graptolite are occasional small crinoid ossicles, although 50mm below this is a shell bed rich in crinoid and brachiopod (especially *Rhynchotreta*) material.

The new specimen of *Monograptus flemingii warreni* indicates an age of upper Wenlock (Homerian Stage), namely *lundgreni* Biozone (Fig. 1), based on previous records of the subspecies from Wales and eastern Ireland (Burns and Rickards 1993).

Acknowledgements

MJB thanks Rod Sloan for leading the 1992 Bristol University field trip to the Dingle Peninsula, and David Harper and Charles Holland for helpful comments. We thank Pam Baldaro for Fig. 1.

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