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# Thornylee Quarry

[NT 420 363]

## Introduction

This quarry and the cuttings in the adjacent dismantled railway expose a 300 m long section in Telychian greywackes and shales referred to the Queensberry Formation of the Gala Group. The site is situated on the north bank of the River Tweed, some 8 km east of Galashiels and 8 km west of Innerleithen, Peeblesshire. Nicol (1850) provided the first description of the rocks and noted the presence of graptolites and abundant 'annelid impressions'; the locality was also mentioned by Peach and Horne (1899, pp. 204–5), who recorded three graptolite species and trace fossils that they referred to *Crossopodia* and *Myrianites*. These trace fossils (Figure 3.71), which were re-examined and described by Benton and Trewin (1980), are exceptionally well displayed at this locality. Thornylee Quarry is the type locality for the ichnofossil referred to *Crossopodia scotica* by M'Coy (1851a), which was transferred to the genus *Dictyodora* by Benton and Trewin (1980).

## Description

The entire sequence comprises greywackes interbedded with red, purple and green shales. The greywackes are mostly medium-grained and graded, sometimes with tool marks and load casts on the bases of beds (Benton and Trewin, 1980). Occasional graptolites occur, and Peach and Horne (1899) recorded *Monograptus exiguus*, *M. priodon* and *Monoclimacis? galaensis*. Trace fossils are abundant, particularly in the shales, with meandering traces especially frequent in the purple shales exposed in the quarry itself. Benton and Trewin (1980) recorded that the ichnofauna is dominated by meandering burrows of *Dictyodora scotica* (larger) and *Dictyodora tenuis* (smaller and more irregular), with *Caridolites* common, and *Nereites* and burrows comparable with *Planolites* present. The assemblage is referable to the *Nereites* ichnofacies.

## Interpretation

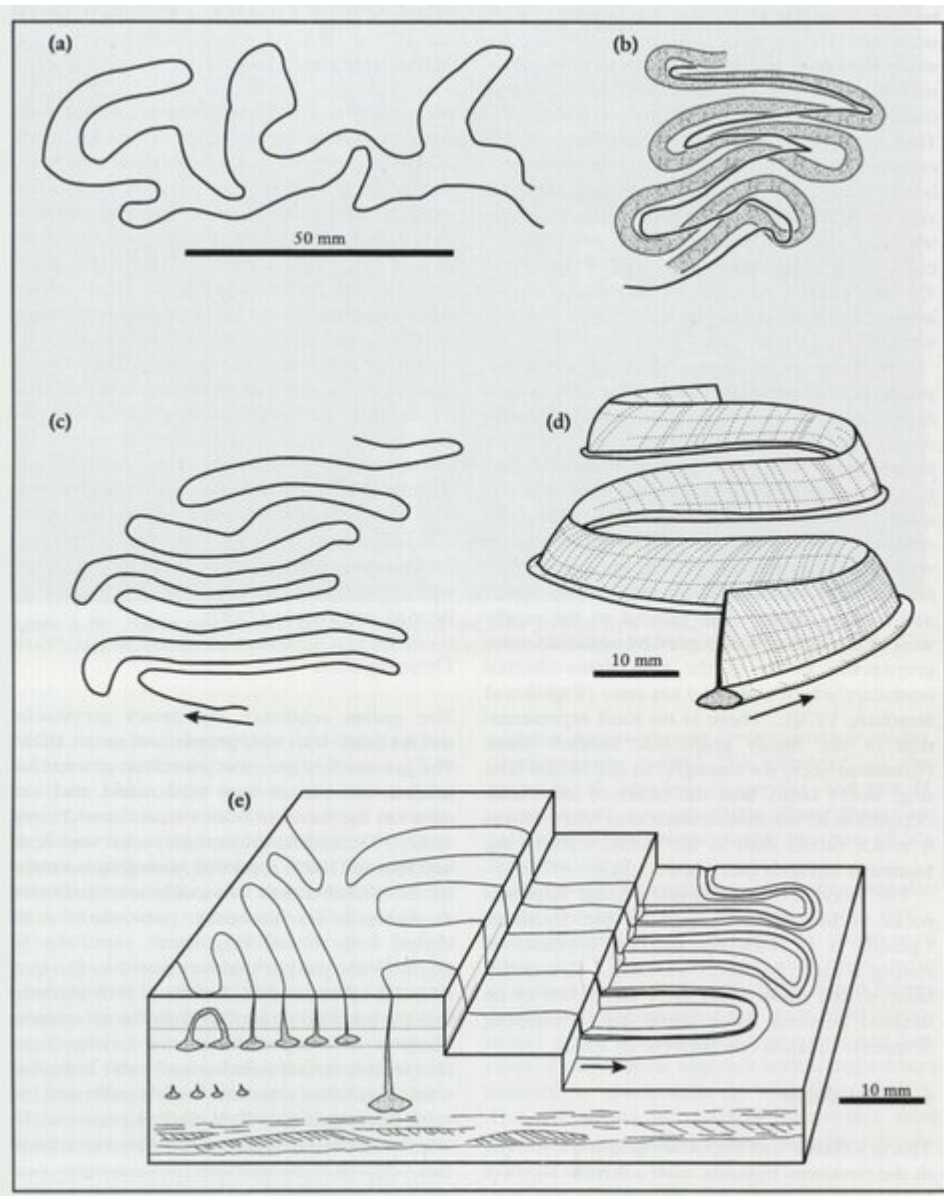
Thornylee Quarry is situated within the Southern Uplands, where a thick, faulted complex of greywacke and graptolitic shale units has variously been interpreted to represent an accretionary prism or a back-arc accumulation (see the Dob's Linn site report). At Thornylee, the thin greywacke units and abundance of shale indicate deposition in a low-energy turbidite environment (Benton and Trewin, 1980). The ichnofauna is assignable to the deep-water *Nereites* association, with the meandering trails typical of animals exploiting a food resource with maximum efficiency. Benton and Trewin (1980) interpreted the small, straight burrows of *Caridolites* as probably representing the juvenile burrows of the same animal as responsible for the *Dictyodora* traces.

This site, together with those at Dob's Linn, Grieston Quarry and Old Cambus Quarry, illustrates the lithologies, stratigraphy and fossils of the early Silurian rocks of the Southern Uplands.

## Conclusions

This is a good representative site for the interbedded greywackes and shales of the Queensberry Formation, which were deposited in a low energy, distal turbidite environment. The locality is particularly important for the abundant and well-preserved trace fossil assemblage preserved in the shales; this ichnofauna is dominated by meandering feeding burrows, which are typical of deep-water muddy sediments.

## [References](#)



(Figure 3.71) The ichnospecies *Dictyodora scotica* from Thornylee Quarry (after Benton and Trewin, 1980). (a) irregular meanders; (b) plan view of basal burrow (stipple) and top wall (solid line); (c) regular meanders; (d) reconstruction of three-dimensional morphology showing basal burrow and wall; (e) block diagram to illustrate different preservational aspects of burrows in plan and in section. Arrows indicate direction of travel of burrowing animal.