

Seend Cleeve

[ST 934 609]

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Introduction

Seend Cleeve Quarry is one of the few remaining exposures of Corallian strata in the once heavily quarried Seend and Caine area of north-west Wiltshire (Figure 2.33). The locality was first described by Lonsdale (1832), and subsequently by Blake and Hudleston (1877) and Woodward (1895). However, it was not until the time of Arkell (1933, p. 393, 1935–1948, 1951, pp. 5, 6) that the full stratigraphical value of the Seend Cleeve succession was realized, and the Seend area became the type area of the Lower Oxfordian Cordatum Subzone. This site has played a prominent role in helping to re-evaluate the Lower and Middle Oxfordian stratigraphy of north-west Wiltshire (Wright, 1980). The quarry 250 m across, is now grassed over and criss-crossed by public footpaths, but much of the quarry face is preserved.

Description

Accounts of the area prior to 1951 attributed all the sandstones of the Seend Cleeve area to the Lower Calcareous Grit. However, two distinct ammonite faunas were recorded from the area by Arkell (1935–1948), a Lower Oxfordian Cordatum Subzone fauna from the lower 12 m of typical Lower Calcareous Grit, and a Middle Oxfordian Vertebrale Subzone fauna from the shelly gritstone (Seend Cleeve Sandstone) at the top of the section.

No exposures remain of the Lower Calcareous Grit proper, but the shelly gritstone is exposed at several locations within the quarry. The quarry face yields limited exposures only, at the time of writing. In 1978, the following was seen by the present author at [ST 934 609]:

	Thickness (m)
3. Flaggy, shelly, sandy limestone with numerous foraminifera seen in thin section, and with a distinctive, brown-weathering, micritic matrix. A thin band of medium-grained, calcareous sandstone is present at the top	seen to 1.15
2. Soft, medium-grained quartz sand with lens-shaped, fossiliferous concretions containing <i>Pleuromya uniformis</i> (J. Sowerby), poorly exposed	approx. 1.20
1. Coarse-grained, poorly sorted, sandy, shelly limestone, partially decalcified, with <i>Gervillella aviculooides</i> (J. Sowerby)	seen to 0.45

A weathering profile of the section is given in (Figure 2.34). Beds 1 and 3 contain quartz grains and bivalves set in a micritic matrix. The quartz grains frequently exceed 1 mm in diameter. Quartz pebbles between 2 and 6 mm are common at the top of Bed 1. The quarry face has deteriorated somewhat since 1978, and at the time of writing the sandy limestone and sandstone of Bed 3 only are exposed. Beds 1–3 were formally named the Seend Cleeve Sandstone by Wright (1980).

The Lower Calcareous Grit was originally described by Lonsdale (1832). He saw a 7.5 m section exposed in a quarry at the foot of Seend Hill, on the south-east side of the Trowbridge Road. The predominant lithology was a fine-grained quartz sand, with irregular lenses and beds of intensely hard 'grit' (calcareous sandstone). The cemented beds were frequently very fossiliferous, sometimes so much so that the rock became an impure, shelly limestone. Woodward (1895) saw 3.6 m of white sand, with brown iron staining, and with seams of brown clay, exposed in a pit 'west of Seend Iron Works'. Some portions of the sand were shelly, with *Liostrea* sp., *Chlamys* sp. and *Nanogyra nana* (J. Sowerby), and irregular concretions were developed.

Both the Lower Calcareous Grit, which presumably was exposed in the floor of the present quarry, and the Seend Cleeve Sandstone, yielded numerous ammonites during the period when the quarries were being worked (Arkell, 1935–1948). The following are believed to have come from this quarry and from other now defunct quarries in the Seend Cleeve area:

Lower Calcareous Grit (Cordatum Subzone)

Cardioceras (*Cardioceras*) *cordatum* (J. Sowerby), *C. (C.) galeiferum* Buckman (holotype), *C. (C.) ashtonense* Arkell, *C. (Scoticardioceras)* *stella* Buckman (holotype), *(C.) (?Scarburgiceras)* sp., *Goliathiceras* (*Goliathites*) *cyclops* Arkell (holotype), *Aspidoceras* (*Euaspidoceras*) *nikitini* Borissjak, and *A. (E.) acuticostatum* (Young and Bird).

Seend Cleeve Sandstone (Vertebrate Subzone)

Cardioceras (*Cardioceras*) *cordatiforme* (Buckman), *C. (Vertebriceras)* cf. *dieneri* Neumann, *C. (Sagitticeras)* *moderatum* (Buckman), *Goliathiceras* (*Goliathites*) *titan* Arkell and *G. (G.) capax* (Young and Bird)

A varied bivalve fauna is also known from this unit (Blake and Hudleston, 1877).

Interpretation

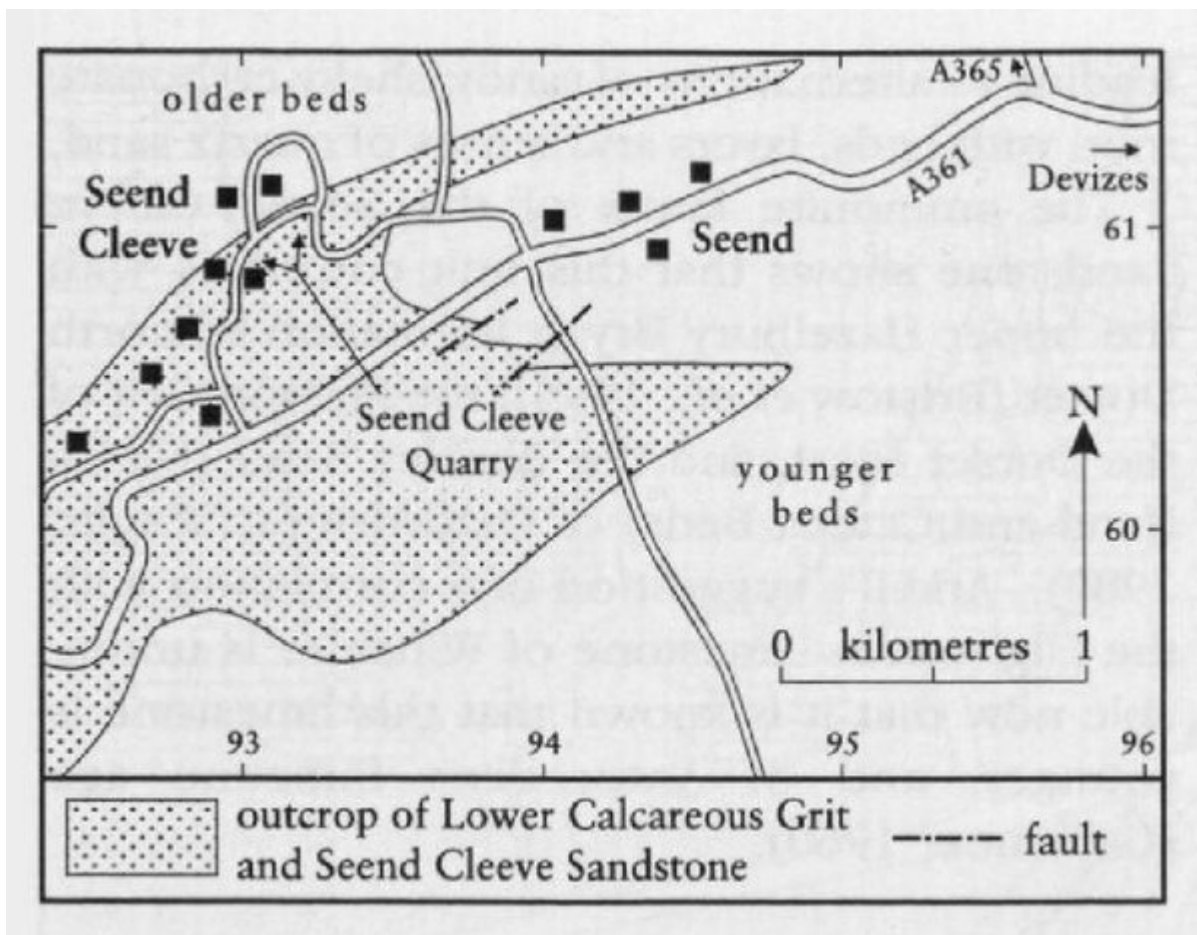
The facies of the Seend Cleeve Sandstone is typical of that of the Corallian shell beds of Wiltshire and Oxfordshire. Coarse-grained quartz sands and pebbles — presumably a high-energy component — are combined with well-preserved ammonites and bivalves in a micritic matrix, implying a lack of winnowing currents. Thus, the Seend Cleeve Sandstone seems to have formed in an area offshore to a beach bar, pebbles and quartz sand from which were periodically swept into this deeper water where there were insufficient currents to wash away interstitial carbonate mud, and where the prolific fauna of bivalves and foraminifera could thrive. Periodically, severe storms swept more substantial amounts of quartz sand into the area, leading to alternations of sandy, shelly carbonate mud with beds, layers and lenses of quartz sand.

The ammonite fauna of the Seend Cleeve Sandstone shows that this unit correlates with the upper Hazelbury Bryan Formation of north Dorset (Bristow *et al.*, 1995), the Preston Grit of the Dorset coast, and the Beckley Sand (Natica Band and Catena Beds) of Oxfordshire (Wright, 1980). Arkell's suggestion of a correlation with the Highworth Limestone of Wiltshire is untenable now that it is known that this limestone is younger, and of Antecedens Subzone age (Callomon, 1960).

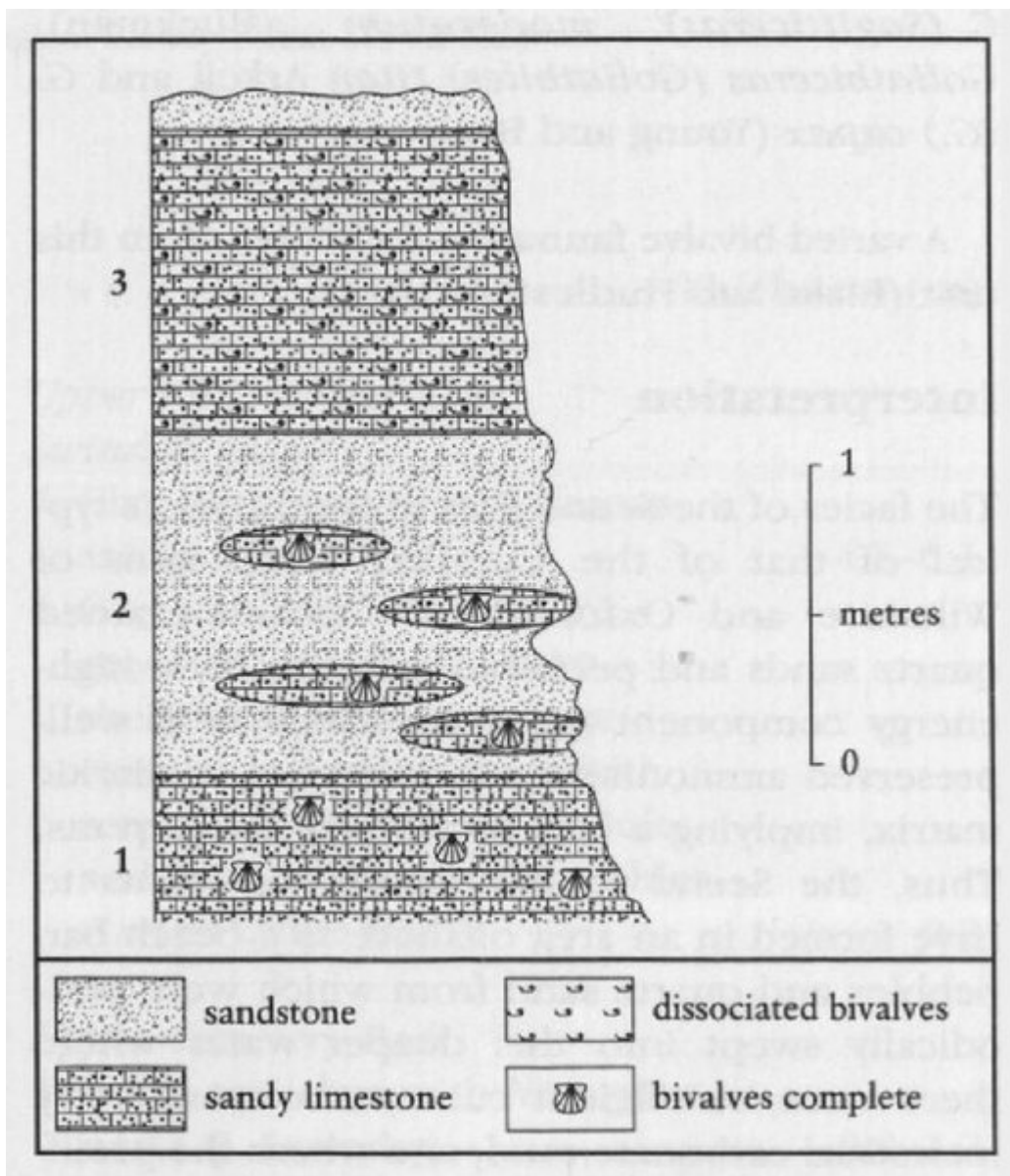
Conclusions

It is likely that this quarry has produced many of the excellently preserved cardioceratids of Cordatum Subzone age (see Arkell, 1935–1948, pl. LXVIII) recorded from the district, which is the type area for the Subzone. This is the stratotype section of the Seend Cleeve Sandstone, and is the only exposure of beds of Vertebrate Subzone age between Oxfordshire and the Dorset coast to yield a good ammonite fauna.

References



(Figure 2.33) Locality map for the Seend Cleeve GCR site. Outcrop of the Corallian sandstones from BGS Sheet 281 (Frome) (1965).



(Figure 2.34) Weathering profile of the Corallian succession at Seend Cleeve Quarry as seen by J.K. Wright in 1978.