
First Cutting West of Notgrove, Gloucestershire

[SP 0830 2083]–[SP 0884 2106]

M.G. Sumbler

Introduction

The GCR site known as 'First Cutting West of Notgrove' is situated on the disused Andoversford to Bourton-on-the-Water railway in Gloucestershire (Figure 3.50). It lies close to the village of Salperton, but about 2.5 km from Notgrove; it takes its name from Buckman's (1890) description of it as the 'first cutting west of Notgrove Station', and it should not be confused with Notgrove Station Cutting. The site exhibits one of the best sections of the uppermost part of the Inferior Oolite Group in the Cotswolds, and has recently been designated the type section of the Salperton Limestone Formation (Upper Inferior Oolite) and its two members (the Upper Trigonía Grit and Clypeus Grit) as well as the Notgrove Member of the Aston Limestone Formation (Middle Inferior Oolite) (Barron *et al.*, 1997).

Description

This cutting was first described by Buckman (1890) and later by Woodward (1894); Buckman's section was extended slightly by Richardson (1929b). Apart from the lowest beds, which are no longer exposed, the section is much as described by these authors. The currently exposed section, based on that reported by Barron (1998), is given below.

	Thickness (m)
Salperton Limestone Formation	
<i>Clypeus Grit Member</i>	
5: Limestone, very pale grey-brown, poorly bedded and rubbly, medium- to very coarse-grained peloidal, ooidal and shell-fragmental packstone with grain aggregates and common whole shells; particularly rubbly and rather soft near top, slightly harder and better bedded for c. 2 m in middle part, and in basal c. 1 m, which is somewhat finer-grained than above; limestone pebbles at base	c. 10.5–12.0
<i>Upper Trigonía Grit Member</i>	
4: Limestone, very pale yellow-brown, irregularly and unevenly bedded, medium-to coarse-grained, peloidal and shell-fragmental grainstone to pack-stone with common larger shell fragments, and whole shells; sharp, uneven top surface	1.05–1.20
3: Clay, grey-brown, shell-detrital	0–0.02
Aston Limestone Formation	
<i>Notgrove Member</i>	
2: Limestone, very pale-grey, massive, hard and recrystallized, medium- to coarse-grained, ooidal grainstone with numerous pale-brown, very coarse, ovoid peloids, and minor proportion of shell debris; top oyster-encrusted and bored in places; thin (0.01 m) clay seam at base	up to 0.31
1: Limestone, off-white to very pale-brown, unevenly bedded in upper part, massive below; medium- to coarse-grained, ooidal grainstone with subordinate peloids and shell debris as Bed 2; bored in upper part in places; fairly common sub-vertical burrows throughout	seen to 1.51

The beds dip gently (up to 5°) towards the north-east, so that the oldest beds are seen at the western end of the section, to the west of the overbridge [SP 0848 2090] (see Woodward, 1894, fig. 43). The underlying beds were formerly exposed; as originally described by Buckman (1890, beds 8 to 10), some 3.3 m of the Gryphite Grit Member was seen, with '*Gryphaea sublobata*' in the lower part. This member of the Aston Limestone Formation (Middle Inferior Oolite) may be inspected at other localities in the vicinity, notably Leckhampton Hill and Harford Cutting (see GCR site reports, this volume). The Notgrove Member was previously exposed to its full thickness of 3.9 m (Buckman, 1890, beds 6 and 7), but only the upper part is now visible. Formerly known as the 'Notgrove Freestone', it is a fairly uniform and massive, poorly fossiliferous oolite. The top surface is a well-developed hardground, with a somewhat uneven, eroded surface, locally encrusted by oysters and serpulids; the underlying limestone is recrystallized and intensely hard, forming an irregular but prominent bed in the face (Bed 2). Narrow, sub-vertical, tubular annelid borings extend down from the hardground surface by up to 0.3 m, in some cases extending into the underlying Bed 1.

The succeeding Upper Trigonina Grit Member is richly fossiliferous, with common brachiopods (such as *Rhactorhynchia hampenensis* (S.S. Buckman) and the distinctive *Acanthothiris spinosa* (Linnaeus)) and bivalves, including large myaceans and trigoniids, often preserved as empty external moulds. It has also yielded ammonites; Buckman (1890) recorded '*Ammonites parkinsoni*', and in 1995 a poorly preserved parkinsoniian was found immediately above the base (Barron, 1998).

The Clypeus Grit Member is well exposed throughout much of the cutting east of the bridge; up to c. 12 m are seen, representing almost the total thickness of the formation, and probably the most complete section in the Cotswolds. Richardson (1929b), adding to Buckman's (1890) data, noted a total of 12.34 m, capped by 0.3 m of 'Upper Estuarine Clay'. The latter probably represents the Fuller's Earth Formation (Great Oolite Group). Although this formation is not currently exposed, mapping indicates that its basal beds skirt the northern side of the cutting, and a thin lenticular development of the Chipping Norton Limestone Formation occurs between the Fuller's Earth Formation and the Clypeus Grit Member in the field just to the north of the bridge. The Clypeus Grit Member is richly fossiliferous, particularly with brachiopods (notably *Stiphrothyris*) and large myacean bivalves. The eponymous echinoid *Clypeus ploti* Salter (Figure 3.51) is especially common in the uppermost beds, and is probably in large part responsible for the pervasive burrowing and consequent rubbly character of these beds.

Interpretation

The Notgrove Freestone was so named by Buckman (1890) after the section at the First Cutting West of Notgrove. The unit has recently been formalized as the Notgrove Member (of the Aston Limestone Formation (Middle Inferior Oolite)), and this cutting is designated as the type section (Barron *et al.*, 1997). Here, the Notgrove Member is the youngest unit of the Aston Limestone Formation, and the hard-ground at the top marks a substantial erosional non-sequence. Although the member is characteristically poorly fossiliferous, it is known to belong to the Lower Bajocian Laeviuscula Zone from its stratigraphical position in more complete sections elsewhere (e.g. see Rolling Bank Quarry GCR site report, this volume).

The Upper Trigonina Grit Member and, more especially, the Clypeus–Grit Member are very well exposed in this section. Together, these units constitute the Upper Inferior Oolite, which is of Late Bajocian to Early Bathonian age.

Recently, the units have been combined into one lithostratigraphical formation, the Salperton Limestone Formation, of which the Upper Trigonina Grit and Clypeus Grit are constituent members (Barron *et al.*, 1997). The First Cutting West of Notgrove is the type section for all three units. The ammonites recorded from the Upper Trigonina Grit Member, both here and elsewhere, indicate that the member belongs to the Acris Subzone of the Garantiana Zone (Upper Bajocian). The characteristic ammonites of this interval are *Garantiana* and early forms of *Parkinsonia*. The sharp junction between the Clypeus Grit and Upper Trigonina Grit members, and the presence of limestone pebbles at the base of the former, suggests, as at some other sites, a minor non-sequence at this level.

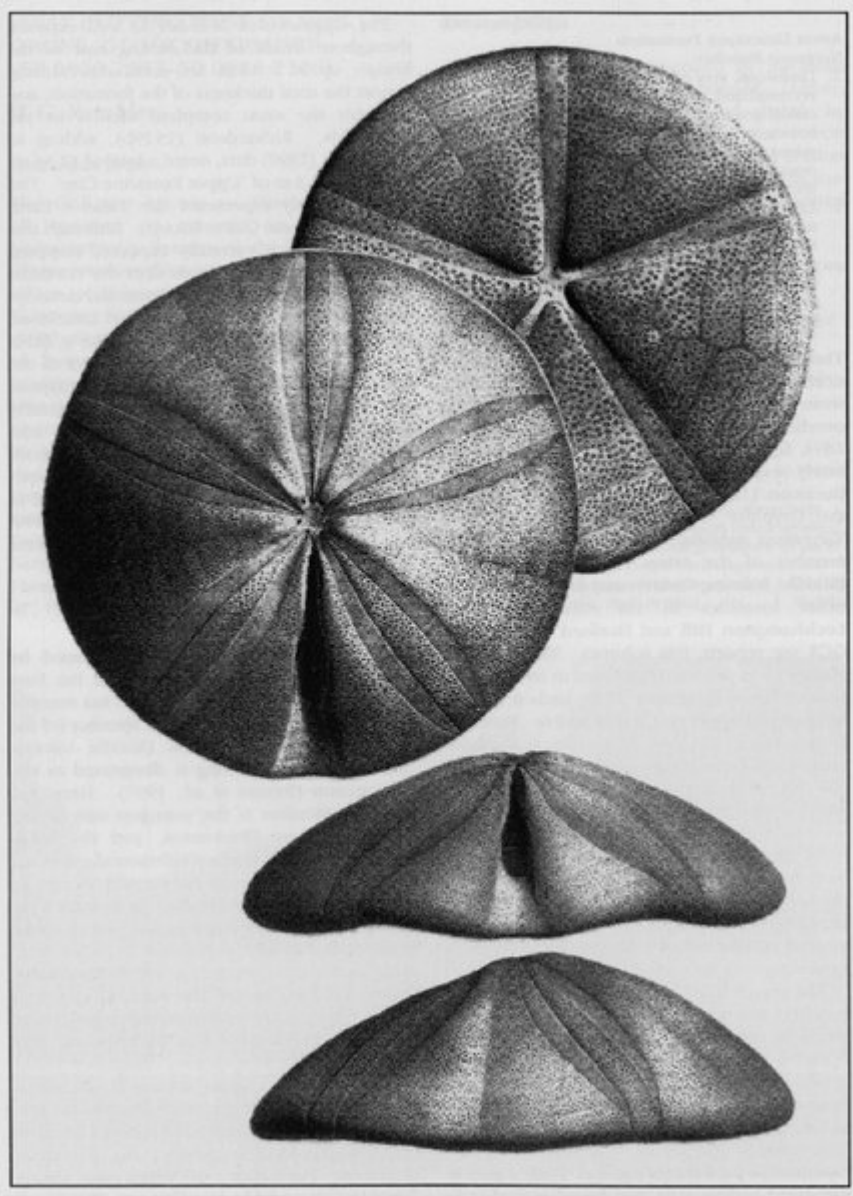
Conclusions

The First Cutting West of Notgrove exposes one of the best and most complete sections of the upper part of the Inferior Oolite Group in the Cotswolds. It is of particular importance as the stratotype of the Notgrove Member (Aston Limestone Formation), the Salperton Limestone Formation and its two members, the Upper Trigonina Grit and Clypeus Grit.

References



(Figure 3.50) General view looking west in the First Cutting West of Notgrove, showing the eastward dip of the Clypeus Grit Member. (Photo: M.G. Sumbler.)



(Figure 3.51) *Clypeus ploti* Salter. Reproduced from Wright, 1859, pls 28, 29, at approximately 90% natural size.)