

Huntsman's Quarry

[SP 125 255]

Introduction

This is the only plant-bearing site within the Middle Jurassic Eyford Member ('Cotswold Slates') of the Charlbury Formation in Gloucestershire that still exists. Although less diverse than the slightly younger Stonesfield succession in Oxfordshire, it has yielded some species not found in Oxfordshire and thus expands our knowledge of the Middle Jurassic floras of southern Britain.

The so-called 'Cotswold Slate' of Gloucestershire was for a long time regarded as equivalent to the 'Stonesfield Slate' of Oxfordshire. It has yielded a fossil flora that has a number of taxa in common with the latter, but it is now recognized to be stratigraphically lower (Boneham and Wyatt, 1993). Plant fossils are known from the Eyford area and Sevenhaston Common, both of which are between Stow-in-the-Wold and Cheltenham in the Cotswolds. However, exposures of these beds still exist only in the Eyford area, of which Huntsman's Quarry is the best.

There has been no systematic survey of the Eyford flora in recent years. Strickland and Buckman (1844) provided a list of species, and Seward (1904) included them in his review of what he called 'Stonesfield Slate' (i.e. including the 'Cotswold Slate'). The most intensive collecting here appears to have been undertaken in the mid-19th century by a local amateur, Edward Writts, the curate at the nearby village of Stanway. His collection is now in Gloucester Museum and Savage (1961) gave a list of the plant species preserved there.

Description

Stratigraphy

Richardson (1929), Ager *et al.* (1973) and Mudge (1995) have described the geology of this quarry, where 4.9 m of sandstones and bioclastic limestones of the Eyford Member are overlain by 3.5 m of oolitic limestones of the Taynton Formation (Figure 4.7). Many authors have assigned the Eyford Member, the formal name for beds traditionally known as the 'Cotswold Slate', to the Sharp's Hill Formation (e.g. Sellwood and McKerrow, 1974). However, it is now included within the Charlbury Formation, which Boneham and Wyatt (1993) established for a distinctive set of lithologies between the Sharp's Hill and Taynton Limestone Formations. From the comments made by Richardson (1929), the fossiliferous tilestones were probably in the limestone unit that he termed 'Pendle', about 3 m below the top of the Eyford Member.

Palaeobotany

Twelve species of plant macrofossil have been reported from Huntsman's Quarry, all preserved as impressions (*sensu* Shute and Cleal, 1987), sometimes picked out by iron staining or other mineralization. A list of species is shown in (Table 4.1). The most common remains are conifer foliage (*Brachyphyllum*) and, to a lesser extent, cone scales (*Araucarites*). There are also remains of ferns, caytoniales, cycadophytes and ginkgos, as well as a number of forms of unknown affinities (e.g. *Pelourdea*).

(Table 4.1) Fossil floras found in the Middle Jurassic strata of southern England.

	Stonesfield	Huntsman's Quarry
Cf. <i>Dictyophyllum</i> sp.	×	
<i>Phlebopteris woodwardii</i>	×	
Leckenby		
Cf. <i>Coniopteris</i> sp.	×	×
<i>Sagenopteris colpodes</i> Harris	×	×

<i>Ctenis</i> cf. <i>sulcicaulis</i> (Phillips)	x		
Ward			
<i>Ctenis</i> sp.	x		
<i>Ptilophyllum pectiniformes</i>			
(Sternberg) Rees and Cleal	x		
<i>Ptilophyllum</i> cf.			
<i>hirsutum</i> Thomas and Bancroft	x		
<i>Sbhenozamites? bellii</i> Seward	x		x
? <i>Weltrichia</i> sp.	x		
Cf. <i>Ctenozamites leckenbyi</i>			
(Leckenby) Nathorst	x		
<i>Taeniopteris vittata</i> Brongniart		x	x
<i>Conites bucklandii</i> Sternberg	x		
<i>Ginkgo</i> cf. <i>longifolius</i> (Phillips)			
Harris	x		
<i>G. digitata</i> (Brongniart) Heer			x
<i>Brachyphyllum expansum</i>			
(Sternberg) Seward	x		x
<i>Elatocladus</i> cf. <i>laxus</i> (Phillips)			
Harris	x		
<i>Podozamites stonessfieldensis</i>			
Seward			x
<i>Masculostrobilus</i> sp.	x		
<i>Araucarites brodei</i> Carruthers	x		x
<i>Pelourdea megaphylla</i>			
(Phillips) Seward	x		x
<i>Pachypteris macrophylla</i>			
(Brongniart) Cleal and Rees	x		
<i>Komlopteris speciosa</i>			
(Ettingshausen) Cleal and			
Rees	x		x
<i>Carpolithes diospyroides</i>			
Sternberg	x		x
<i>C. conicus</i> Lindley and Hutton			x
<i>C. spp.</i>	x		

Interpretation

The Eyford flora from Huntsman's Quarry is clearly very similar to that of Stonesfield. On the face of it, the assemblage is less diverse but this may just be because not so much collecting has been done here. Many of the species absent from the Eyford flora are, after all, represented at Stonesfield by only one or two specimens. However, there is one notable absentee, the cycadophyte *Ptilophyllum pectiniformes*, which is an abundant component of the Stonesfield flora. As suggested above, *P. pectiniformes* may have grown as coastal mangrove-like vegetation, which might not have extended further west in Gloucestershire.

Taxa present at Eyford but not at Stonesfield are *Ginkgo digitata*, *Podozamites stonessfieldensis* and *Carpolithes conicus*. The *Ginkgo* is represented by several quite well-preserved specimens that, although not yielding cuticles, are very similar to specimens from Yorkshire. Interestingly, Harris *et al.* (1974) stated that *G. digitata* is relatively rare in most of the Yorkshire localities but seems to be one of the commoner plants at Eyford.

Rarer is what Seward (1904) named *Podozamites stonessfieldensis*, an unfortunate (but nevertheless valid) species epithet as it appears to be absent from the Stonesfield flora. Seward argued that these fossils are the remains of conifer

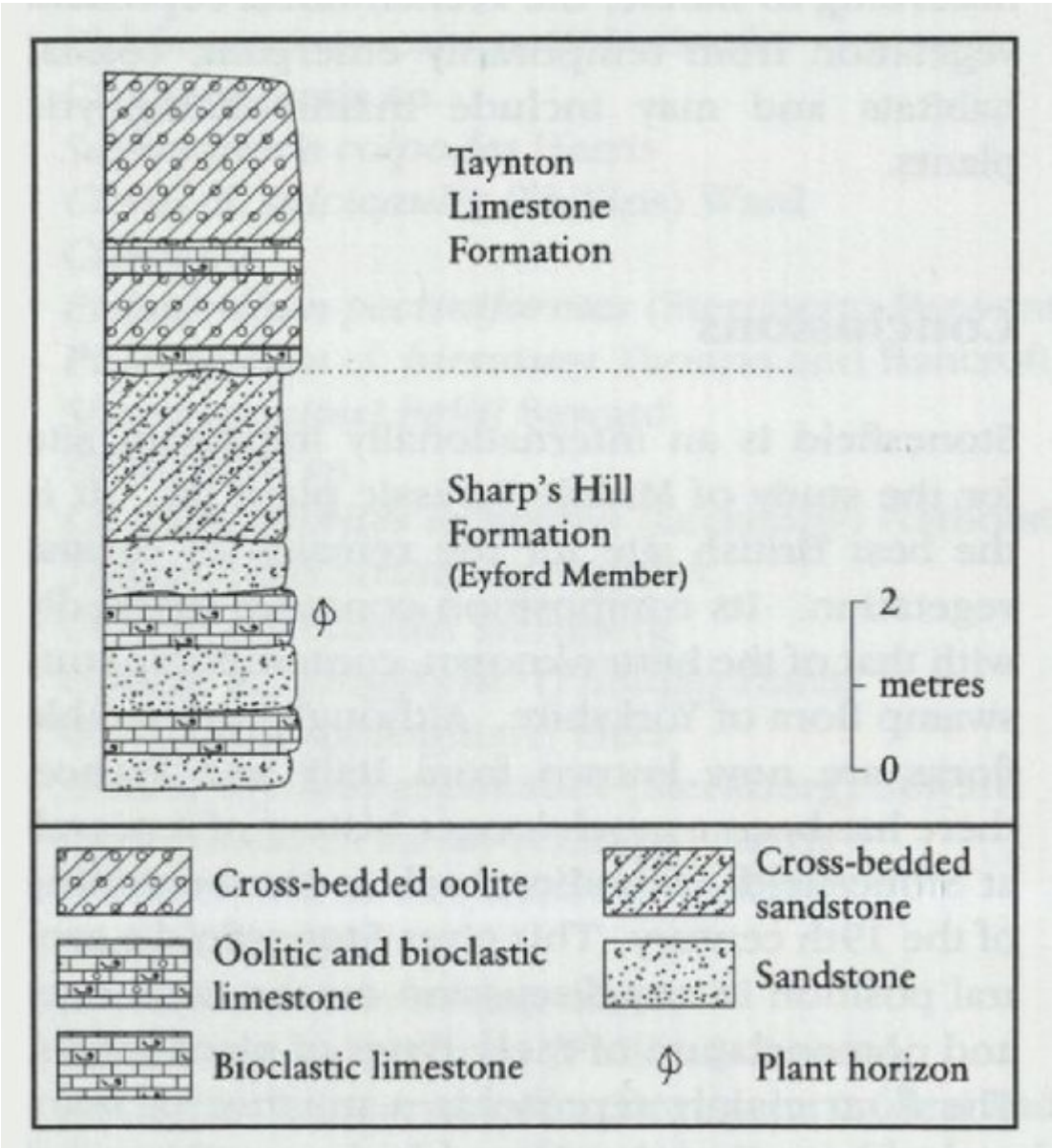
foliage because of their similarity to the leaves of living *Agathis*, although he recognized that this was a highly speculative suggestion in the absence of cuticles and evidence of attachment to stems. There is also the possibility of confusion with *Lindleycladus*, which again can only be distinguished from *Podozamites* if cuticles are available (Harris, 1979a).

Isolated seeds referable to *Carpolithus conicus* are known from a number of Jurassic localities in southern England, but not Stonesfield. Seward (1904) thought that they were most likely to be derived from cycads, although they are also similar to the seeds of living *Ginkgo*.

Conclusions

Huntsman's Quarry is the only remaining site within the Middle Jurassic 'Cotswold Slate' (Eyford Member) that has yielded plant fossils. The flora is very similar to that found in the approximately coeval Stonesfield flora, being dominated by conifers. However, it lacks evidence of the mangrove-like vegetation found abundantly at Stonesfield (principally *Ptilophyllum*). On the other hand, it contains a few species that are absent from Stonesfield, most notably *Ginkgo digitata*. Huntsman's Quarry therefore enhances considerably our understanding of the vegetation that clothed southern Britain during the Middle Jurassic Epoch, about 170 Ma ago.

References



(Figure 4.7) Generalized sequence of the Great Oolite Group exposed at Huntsman's Quarry (After Mudge, 1995.)

	Stonesfield	Huntsman's Quarry
<i>Cf. Dictyophyllum</i> sp.	×	
<i>Phlebopteris woodwardii</i> Leckenby	×	
<i>Cf. Coniopteris</i> sp.	×	×
<i>Sagenopteris colpodes</i> Harris	×	×
<i>Ctenis cf. sulcicaulis</i> (Phillips) Ward	×	
<i>Ctenis</i> sp.	×	
<i>Ptilophyllum pectiniformes</i> (Sternberg) Rees and Cleal	×	
<i>Ptilophyllum cf. birsutum</i> Thomas and Bancroft	×	
<i>Sphenozamites? bellii</i> Seward	×	×
<i>?Weltrichia</i> sp.	×	
<i>Cf. Ctenozamites leckenbyi</i> (Leckenby) Nathorst	×	
<i>Taeniopteris vittata</i> Brongniart		×
<i>Conites bucklandii</i> Sternberg	×	
<i>Ginkgo aff. longifolius</i> (Phillips) Harris	×	
<i>G. digitata</i> (Brongniart) Heer		×
<i>Brachyphyllum expansum</i> (Sternberg) Seward	×	×
<i>Elatocladus cf. laxus</i> (Phillips) Harris	×	
<i>Podozamites stonesfieldensis</i> Seward		×
<i>Masculostrobos</i> sp.	×	
<i>Araucarites brodei</i> Carruthers	×	×
<i>Pelourdea megaphylla</i> (Phillips) Seward	×	×
<i>Pachypteris macrophylla</i> (Brongniart) Cleal and Rees	×	
<i>Komlopteris speciosa</i> (Ettingshausen) Cleal and Rees	×	×
<i>Carpolithes diospyrififormis</i> Sternberg	×	×
<i>C. conicus</i> Lindley and Hutton		×
<i>C. spp.</i>	×	

(Table 4.1) Fossil floras found in the Middle Jurassic strata of southern England.