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Foraminifera and correlation of the Upper Greensand, Branscombe, south-east Devon

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The problems of dating and correlation of the Upper Greensand in south-west England have been discussed by Hamblin and Wood (1976), Selwood et al. (1984), Hart (1971, 1973), Carter and Hart (1977), Hart et al. (1979) and Schroeder et al. (1986).

Hamblin and Wood (1976) erected a formal lithostratigraphy for the Upper Greensand of the Haldon Hills and subsequently attempted a series of lithostratigraphic correlations with the east Devon coast (Selwood et al. 1984), (Fig. 1). They concluded that the basal Telegraph Hill Sands Member at Haldon was the equivalent of the Foxmould Sands of south-east Devon and was thought to be Albian (varicosum or auritus subzone) in age. The Woodlands Sands Member was correlated with the greater part of the Chert Beds in east Devon and the Wolborough Greensand. These units were also considered to be Albian in age. The Ashcombe Gravels Member and the Top Sandstones of the Upper Greensand in SE Devon were thought to be late Albian (dispar Zone) in age on the basis of a lithologic correlation with Shapwick Grange Quarry near Lyme Regis. Finally the topmost lithostratigraphic division of the Haldon Hills, the Cullum Sands-with-Cherts Member, was correlated with either the nonsequence between the Top Sandstones and Bed A1 or with some other part of the Cenomanian Limestone. These units were considered to be early Cenomanian in age.

Hart (1971, 1973) suggested that the species *Orbitolina concava* (Lamarck) was of early Cenomanian age and that this inferred that much of the Upper Greensand Chert Beds of SW England in which this species occurred was also of this age. Carter and Hart (1977) concluded that the populations of *O. lenticularis* found in SW England belonged to the same "faunal community" as those found in the type Lower Cenomanian and that this indicated an early Cenomanian (*Mantelliceras mantelli* Zone) age for the Upper Greensand in which they occurred. Hart, Manley and Weaver (1979) reported a biometric analysis of the orbitoline fauna at Wolborough together with material from the type Lower Cenomanian at Ballon, Albian material from Portugal and cherts found at Bullers Hill Quarry. They concluded that the Wolborough fauna indicated a Late Albian - Early Cenomanian age and that the fauna from Bullers Hill Quarry suggested an early Cenomanian age.

Schroeder et al. (1986) presented the revised nomenclature for the orbitolines found in SW England. Most of these orbitolines had been attributed in the past to the sub-species *Orbitolina (Orbitolina) concava qatarica* but were now considered to belong to the species *Orbitolina (Orbitolina) sefini* Henson 1948, with a stratigraphic range from latest Albian to earliest Cenomanian. Schroeder et al. were able to identify the orbitolines from Wolborough as belonging to the species *O. (O.) sefini* but

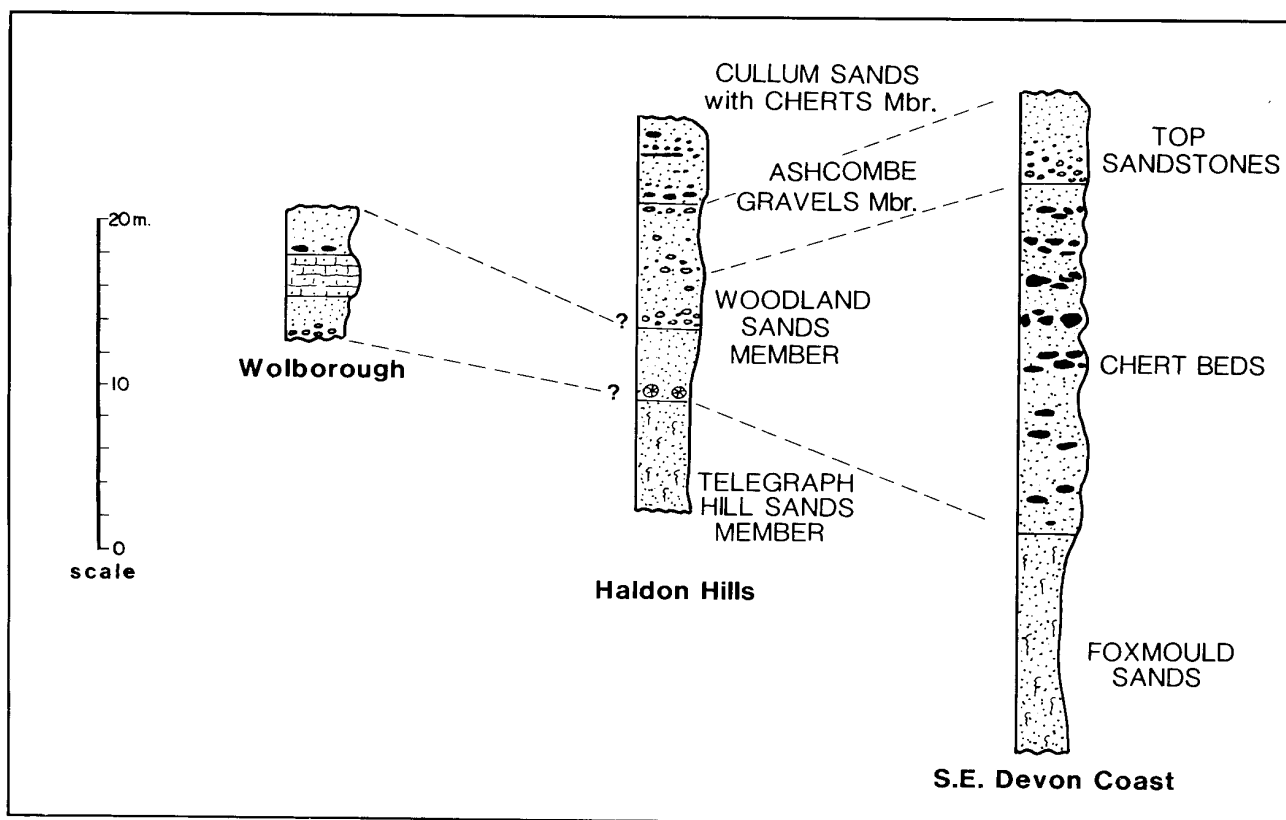


Figure 1. Correlation between sections of the Upper Greensand in south and east Devon (after Hamblin and Wood 1976)

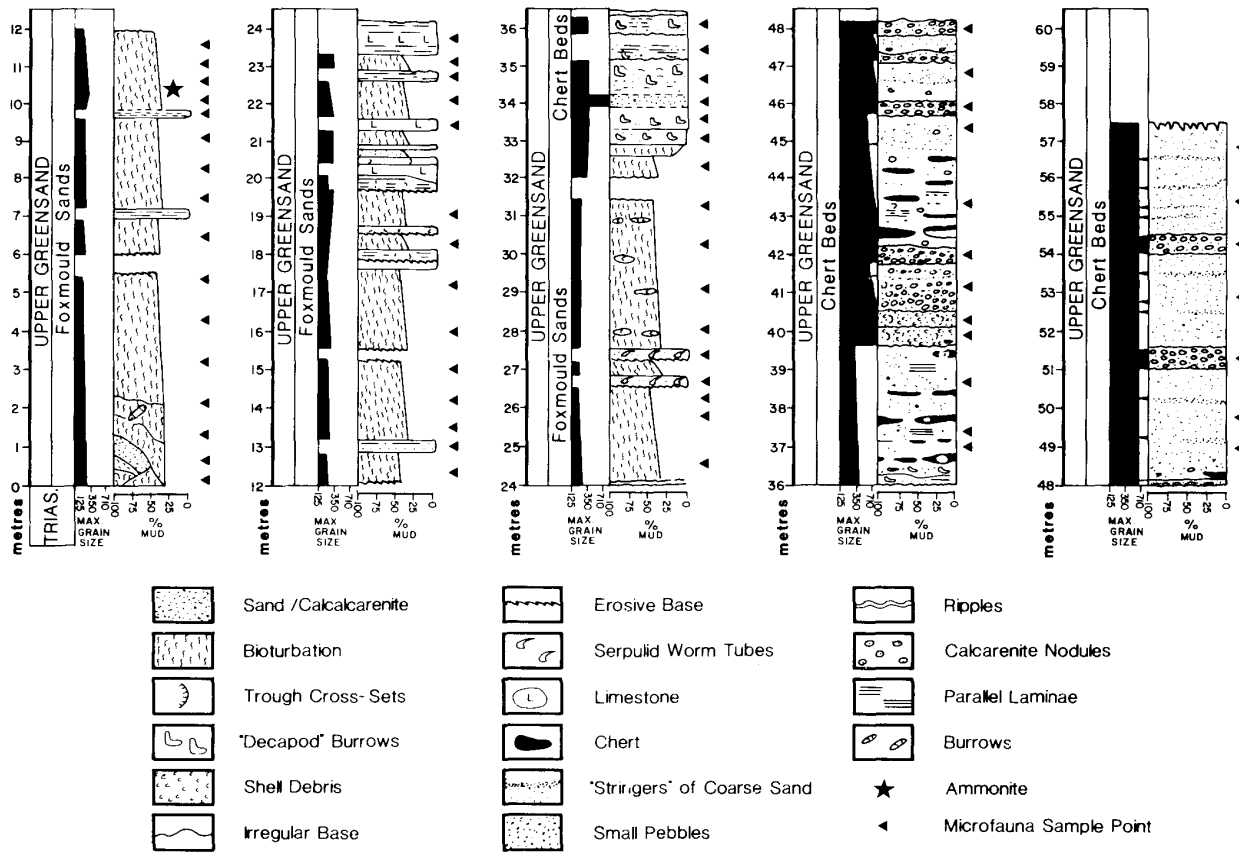


Figure 2. Sedimentary succession of the Upper Greensand at Branscombe.

because of poor preservation it was not possible to confirm identifications at other localities in SW England.

In an attempt to clarify the problems of dating and correlation of the Upper Greensand in SW England the present work examined the microfauna to be found in the section at Branscombe, concentrating on the Foraminifera. The only new ammonite to be found was identified by Owen (pers. comm.) as *Prohystoceras* (*Goodhallites*) *delabechei* Spath which suggests a confirmation of *varicosum* subzone age for the lower part of the Foxmould Sands.

A sedimentary log of the section was drawn-up (Fig. 2) and samples taken to be processed for microfauna. Most of the samples were barren and those that did have a foraminiferal content had a poor fauna in terms of both numbers and species diversity. Preservation was generally poor and it was not always possible to identify below generic level. Those samples which did yield *Foraminifera* were almost entirely confined to the Foxmould Sands (Fig. 3). The stratigraphically useful species observed were: *Arenobulimina cf. advena* - very latest Albian (dispar to Cenomanian), *Citharina d'orbigny* - Lower to Middle Albian, *Heterohelix moremani* - *dispar* in southern England, *Praeglobotruncana delrioensis* - *dispar* to Mid-Cenomanian and *Gavellinella cenomanica* - *dispar* to Cenomanian. These suggest that the upper part of the Foxmould, at least, may be *dispar* zone in age. This casts some doubt on the lithostratigraphic correlation proposed by Hamblin and Wood (1976) between the Haldon Hills and SE Devon with regard to the lateral equivalents of the Foxmould Sands but does not, at present, enable any further correlation of the Chert Beds.

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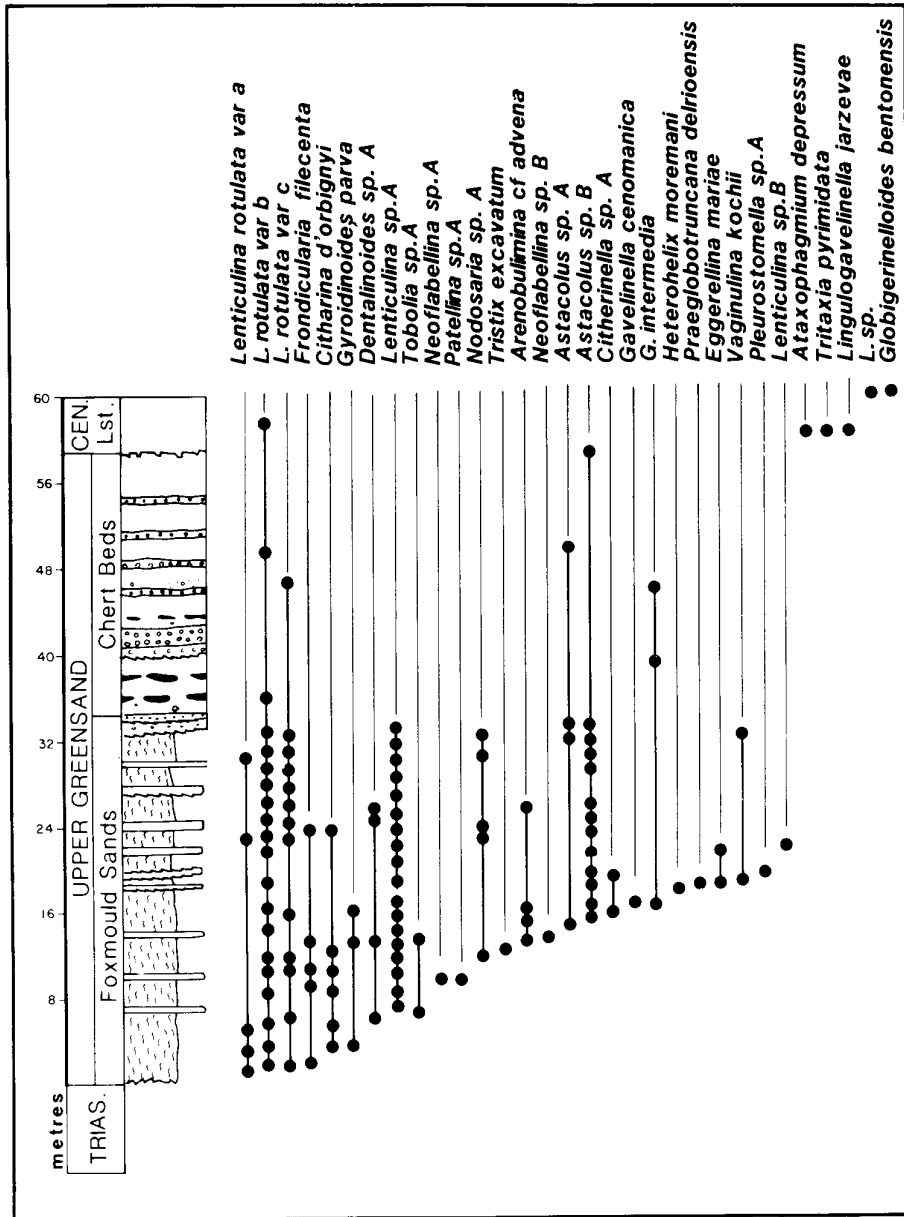


Figure 3. Occurrences of Foraminifera in the Upper Greensand, Branscombe, SE Devon.