Neutral Farm Pit, Butley, Suffolk

[TM 3715 5105]

Highlights

The pit at Neutral Farm, Burley, is one of the best known localities which exposes the sediments of the 'Butleyan' stage of the Red Crag.

Introduction

The pit at Neutral Farm lies just south of a small lane linking Burley and Butley Mills. The pit has been known since at least 1871 when it was recorded by Taylor (1871), Bell (1871) and Prestwich (1871b), and may be the same as one described earlier by Wood (1864). Bell (1871) describes the section as 300 feet long (91.4 m) and 35 feet deep (10.7 m). He lists the fossils from the pit which include freshwater and terrestrial molluscs. A further list was given by Bell and Bell (1872). Although not specifically referred to by Harmer (1900a), this pit was later considered to be the type locality for Harmer's Butleyan stage (Ovey and Pitcher, 1948).

Description

At the present time the pit faces are much slipped and overgrown. In the 1970s, over 7 m of Red Crag were exposed (Markham, 1973) (Figure 11.24). The Red Crag is overlain by sandy gravel with quartz and quartzite pebbles typical of the Kesgrave Sands and Gravels (Rose, 1986).

Dixon (1977) described a section of over 6 m of Red Crag. A lower unit 2.55 m thick showed conspicuously cross-bedded shelly sands with foresets indicating a sand transport direction to the south-west. The shell-rich sands ranged from medium- to coarse-grained, with alternations between finer and coarser foreset laminae. A further 1 m of this unit was proved by excavation into the floor of the pit. The dip direction of the foresets indicated a dominant sand transport to the south-west with deposition in water depths of 10–20 m (Dixon, 1979).

The lower unit was unconformably overlain by 3.1 m of burrowed, trough cross-bedded sands which grade upwards into laminated silts and fine sands, reflecting an overall shallowing-upwards in the sequence.

The site has yielded an extensive fauna, with Bell (1871) listing 165 species and varieties of marine mollusc. Dixon (1977) listed over 100 species of mollusc and found that, in common with assemblages in other Red Crag sites in this area, the fauna was dominated by *Mytilus edulis, Spisula ovalis, Cerastoderma angustatum, Macoma obliqua* and *M. praetenuis,* which suggest a shallow nearshore marine environment. He further suggested that species like *Mytilus edulis* may have thrived in rocky areas formed by an emergent ridge of Coralline Crag that may have existed a few kilometres to the east. The presence of species such as *Scrobicularia plana, Serripes groenlandicus* and *Mya pullus* were believed to be stratigraphically significant, indicating an early Pleistocene age.

Amino acid ratios for *Mya* shells from this site have been determined by Miller *et al.* (1979), but the stratigraphical implications were inconclusive.

The Neutral Farm site has long been known as one of the rare Red Crag sites that have yielded shells of freshwater and terrestrial molluscs. Bell (1871) lists seven species. These shells are believed to originate from sediments just above the unconformable junction between the two units described above (Dixon, 1977).

The foraminifera assemblage of the Neutral Farm Pit has been compared to the pre-Ludhamian zone of the early Pleistocene (Beck *et al.,* 1972) (Figure 8.1). The ostracod fauna is dominated by *Baffinicythere howei, Cytheropteron nodosum, Finmarchinella logani, Kuiperiana venepidermoidea* and *Leptocythere psammophila* (Lord *et al.,* 1988).

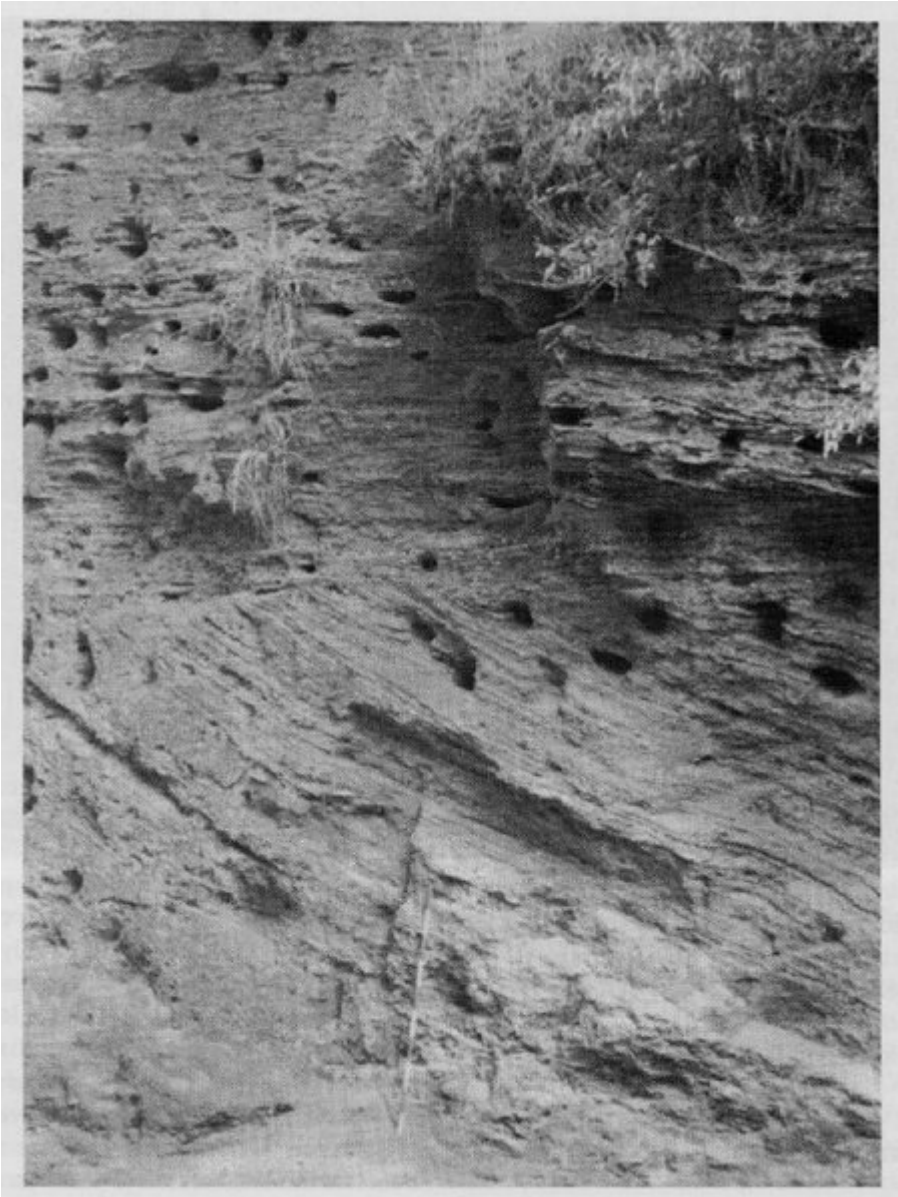
Interpretation and evaluation

The section at Neutral Farm is one of the most northerly of the 'classic' Red Crag sites. It lies 1.6 km SE of the borehole at Wantisden designated by Zalasiewicz and Mathers (1985) as the type section for the Red Crag Formation. The Neutral Farm section shows a shallowing-upward sequence which can be compared to those at Orford Lodge to the east and Broom Covert to the south. The sediment transport direction indicated by the foreset dips is to the south-west and was believed by Dixon (1979) to have been influenced by the Coralline Crag 'ridge' approximately 4 km to the east.

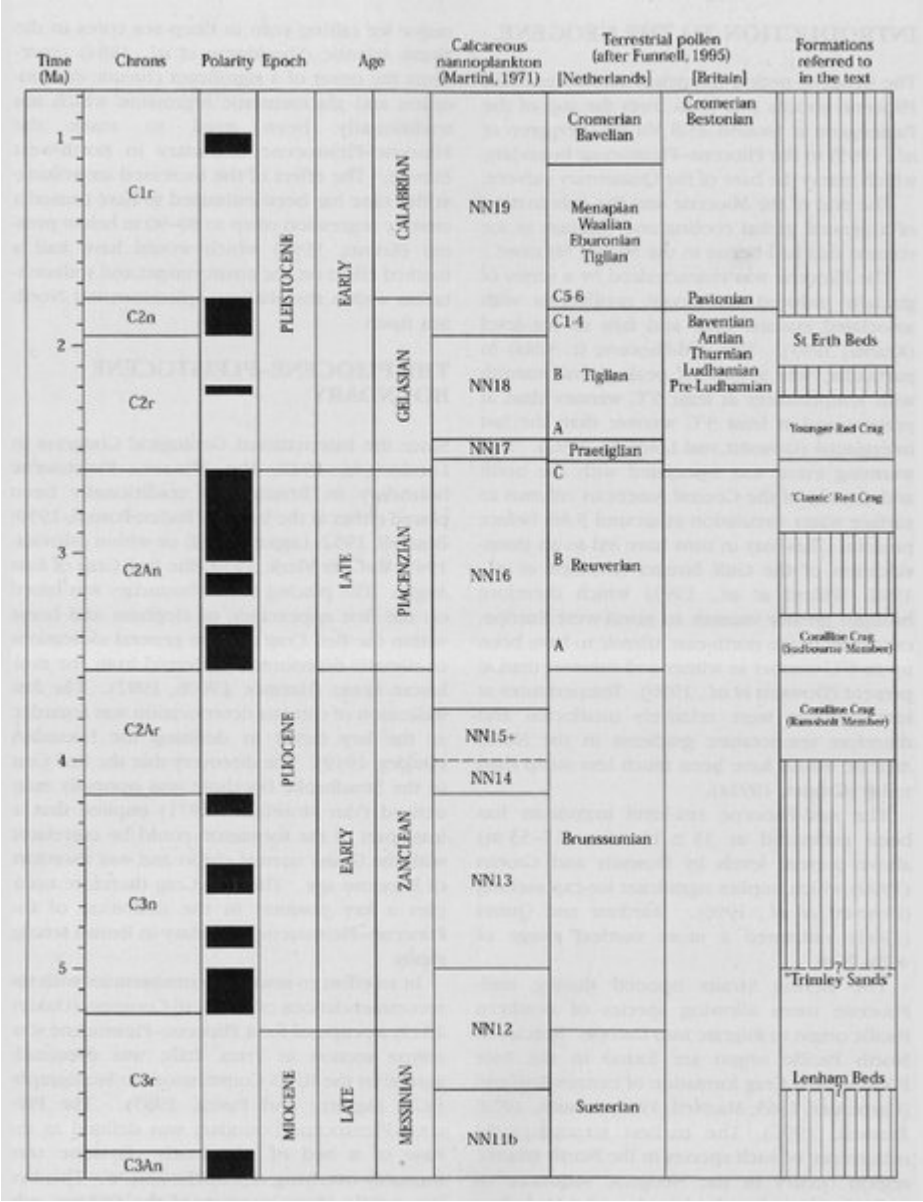
Conclusions

The pit at Neutral Farm is an important site for the study of Red Crag stratigraphy as a possible type locality for the 'Butleyan stage'. It is significant as it is one of the very few localities where terrestrial and freshwater molluscs have been recorded in the marine sediments of the Red Crag.

References



(Figure 11.24) The Neutral Farm pit face in 1975 showing large-scale cross-bedding and a sharp horizontal truncation surface. Scale is 1 m long. (Photograph: P Balson.)



(Figure 8.1) Stratigraphical position of UK Neogene Formations. Standard Neogene Chronology after Berggren et al. (1995). For the purposes of this volume the Plio-Pleistocene boundary has been placed at the base of the Gelasian stage. The Olduvai subchron is C2n and the Gauss normal polarity chron is C2An. The Gauss/Matuyama boundary lies between C2An and C2r.