

# MICROPALAEONTOLOGY NOTEBOOK

## The Flimston Clay, Pembrokeshire, Wales: a probable late Oligocene lacustrine deposit

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**ABSTRACT** - Samples from the Flimston Clay have yielded 30 specimens of pollen and spores. The presence of five identified genera of pollen and spores indicates a probable late Oligocene age.

### INTRODUCTION

Murchison (1839) reported that the Flimston Clay had been dug to a depth of 45 ft, of which 35 ft was clay, 'chiefly white, but sometimes striped red.' Dixon (1921) examined the two overgrown pits 40 years after excavations had stopped and reported that the sediments were unfossiliferous but compared well with the Bovey Tracey Beds and were therefore Aquitanian in age.

The Flimston Clay deposits occur in two excavated, overgrown and waterlogged pits in the Carboniferous Limestone of South Pembrokeshire. The area is part of the Ministry of Defence, Castlemartin RAC Range, and in 1991 we were granted permission to put down a borehole in a 1.5 m deep trench located on the northwestern site of the main pit whose circular outline has a diameter of about 100 m (Grid Ref. BGS Sheet 244/245, 1:50 000 Series, 9528 9268). The Atlas Copco Vibrocorer penetrated 4.6 m of sediment and 6 cores of unequal length were recovered, now held in the Marine Laboratory of the Geology Department, Cardiff University.

The rock sequence consisted of a 20 cm weathered zone below which there were 3 m of white, grey and brown clays underlain by 1.40 m of white clay with red bands, and the hole terminated in a red clay with pebbles of Carboniferous Limestone (1.5 cm) and quartz pebbles (0.4 cm).

### RESULTS

Two sets of samples were taken, from 4–4.5 m and 2.2–2.5 m, and processed by hydrofluoric acid maceration for pollen, spores and palynodebris. Abundant palynodebris is present in both samples and suggests a non-marine and local depositional environment. Sapropelic amorphous matter and other marine debris are absent while fragments of cells from wood, leaves and microorganisms are abundant.

A total of only 30 specimens of pollen and spores have been identified in a total of five microscope slide preparations from the 2.2–2.5 m sample. They are well preserved and show no evidence of having been reworked: *Ericipites*, *Cicatricosisporites*, *Tricolporopollenites*, *Polypodiaceasporites*, *Monocolpopollenites* and *Pityosporites*. Of course, such a limited number of genera do not give a clear picture of the original vegetation, and neither do they comprise reliable index fossils to give a good age determination. However, they are all present in the more substantial assemblages described from Oligocene deposits in the same region (Wilkinson *et al.* 1980) so that a similar Chattian age can be deduced.

There is no doubt that this feasibility study on the Flimston Clay shows there is a high chance that the study of

more samples will give a better picture of the vegetation and its environment. The presence of *Cicatricosisporites* is a particularly hopeful sign since more specimens should enable identification to the species level. I (MCB) would expect to find either *C. paradorogensis* (usually Eocene and early Oligocene) or *C. chattensis* (Chattian). The presence of the latter species was one of the major reasons why Wilkinson *et al.* (1980) opted for a late rather than early Oligocene dating for the Lough Neagh Clays.

The pollen are Oligocene in age and are similar to those obtained from Barnstaple Bay, Bovey Tracey, Petrockstow and Beacon Cottage Farm deposits (Boulter *in* Curry *et al.* 1978; Walsh *et al.* 1987). The Flimston Clay is probably a lacustrine deposit laid down on a land surface which existed on the western side of the United Kingdom in Oligocene times. Further excavations are planned.

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