

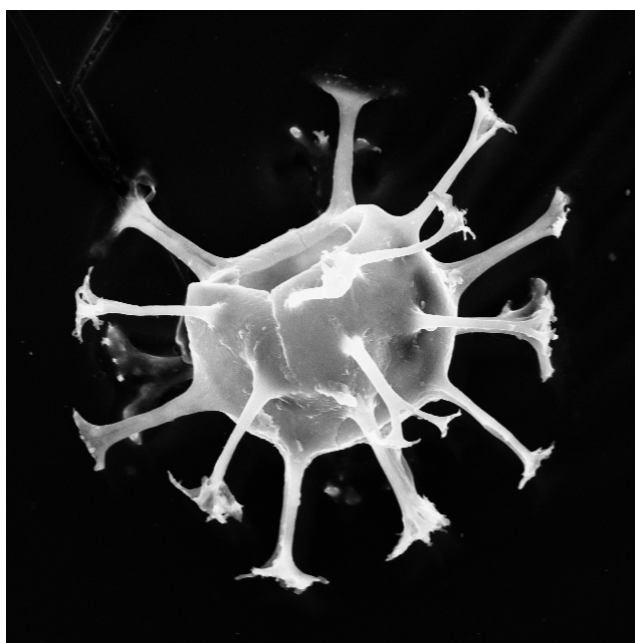


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Microfossils from a suite of samples from the London Clay Formation

Internal Report IR/04/165



BRITISH GEOLOGICAL SURVEY

INTERNAL REPORT IR/04/165

Microfossils from a Suite of samples from the London Clay Formation

Ian P Wilkinson

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Large dinoflagellate cyst from
the London Clay Formation

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Summary

Seven samples of London Clay Formation were examined for their microfossil content in order to determine their stratigraphical position. Samples had been collected between Farnham in the west to Colchester in the East. Fossil assemblages indicated that the majority of samples were from subdivisions A2 to B1 (of King, 1981).

1 Introduction

Seven samples of London Clay (MPA52949-52956) collected from the London Basin, between Farnham in the west to Colchester in the East, were examined for microfossils. Ostracoda were not observed, but rare foraminifera were found with diatoms, radiolaria and dinoflagellate cysts. Biostratigraphical interpretation was possible for most samples.

2 Sample details

Sample No.	National Grid Reference
MPA52949	(TQ) 502800 176600
MPA52950	(SU) 487700 147500
MPA52951	(TQ) 504900 174600
MPA52952	(TL) 574700 208500
MPA52953	(TL) 595500 222600
MPA52954	(TL) 595500 222600
MPA52955	(TQ) 561400 182000
MPA52956	(TQ) 561400 182000

3 Biostratigraphical conclusions

3.1 POYLE

MPA52949 (TQ)502800 176600

The sample yielded the benthonic foraminifer *Cibicidoides alleni* together with the radiolarian *Cenosphaera* sp. In the southern North Sea, *Cenosphaera* sp is abundant up to the top of zone NSP6 (*sensu* King, 1983, 1989), Lower Lutetian, and is of little stratigraphical usefulness in the context of the London Clay. The foraminifera *C. alleni* is also long ranging, although it has not been recorded in the London Clay of the London Basin below subdivision A3.

3.2 FARNHAM

MPA52950(SU) 487700 147500

Barren. The sample is totally pyritised and presumably this has destroyed all microfossils.

3.3 STANWELL

MPA52951(TQ) 504900 174600

Chips of bivalve were observed. Fragmental foraminifera were present, notably common *Lenticulia* sp and rare *Cibicidoides alleni*. A questionable pteropod was also noted. The foraminifera are probably indicative of King's (1981) *Nodosaria*-rich faunule characteristic of London Clay Division B and basal C. However, neither planktonic datum nor the *Osangularia*

datum were observed, suggesting that if this is the *Nodosaria*-rich faunule, it must be at the base of Division B.

3.4 BULL'S LODGE

MPA52952(TL) 574700 208500

Fish teeth and very rare, large dinoflagellate cysts (tentatively identified as *Cordosphaeridium gracile*) were observed, although foraminifera were absent. Large dinoflagellate cysts were reported from Brambledown Clay Pit, Kent (MPA52879, TQ 967715) (Report IR/04/093) and from Colchester (MPA 52954, below).

3.5 COLCHESTER

MPA52953(TL) 595500 222600

(S1) Only a fish tooth and a questionable pteropod were observed. Foraminifera were barren. No conclusions can be drawn.

MPA52954(TL) 595500 222600

(S2) This sample contained a large proportion of wood fragments, together with a large number of worm tubes (*Ditrupa plana*). *Ditrupa plana* first appears within Subdivision A3 of the London Clay, but it is generally rare; only in the middle part of Subdivision B2 and especially in Subdivision C2, do they become common in the London Basin (King, 1981). The abundance of annelids in the present sample suggests C2. However, diatoms were common in the sample, including *Coscinodiscus* sp 1 of Bartenstein et al. (1962) and King (1981, 1983). This large species of diatom is particularly common in Subdivision A2 of the London Clay, but extends through the top of Subdivision B2 in small numbers, at which point it disappears from the record. Although the abundance of *Ditrupa plana* suggests a higher stratigraphical position, its concurrent range with *Coscinodiscus* sp 1 places the assemblage in Subdivisions A3 to B1. Foraminifera were not observed, suggesting that Subdivision B is unlikely (it is within this division that nodosariid-rich assemblages and planktonic taxa become common elsewhere in the London Basin). 'Woody pockets' were described from South Ockendon by George & Vincent (1978) although at slightly lower stratigraphical horizon (A2 sensu King, 1981) and below the inception of *Ditrupa plana*. Gastropod and bivalve fragments and a questionable pteropod were observed in the present sample, together with large dinoflagellate cysts (see MPA 52952).

3.6 OCKENDON

MPA52955(TQ) 561400 182000

(S1) Diatoms, including *Coscinodiscus* sp. 1 sensu Bartenstein et al (1962) and King (1981, 1983) were found in an otherwise non-calcareous sample. Pyrite was common, probably accounting for the absence of calcite. *Coscinodiscus* sp 1 is particularly common in Subdivision A2 of the London Clay, but extends through the top of Subdivision B2 in small numbers

MPA52956(TQ) 561400 182000

(S2) This sample lacked foraminifera although the large diatom *Coscinodiscus* sp2 sensu Bartenstein et al. (1962) and King (1981, 1983) was present together with a coccolithid radiolarian. The absence of foraminifera and frequent *Coscinodiscus* is typical of the A Division in the London Basin, and particularly subdivision A2 (the Walton Member of some authors).

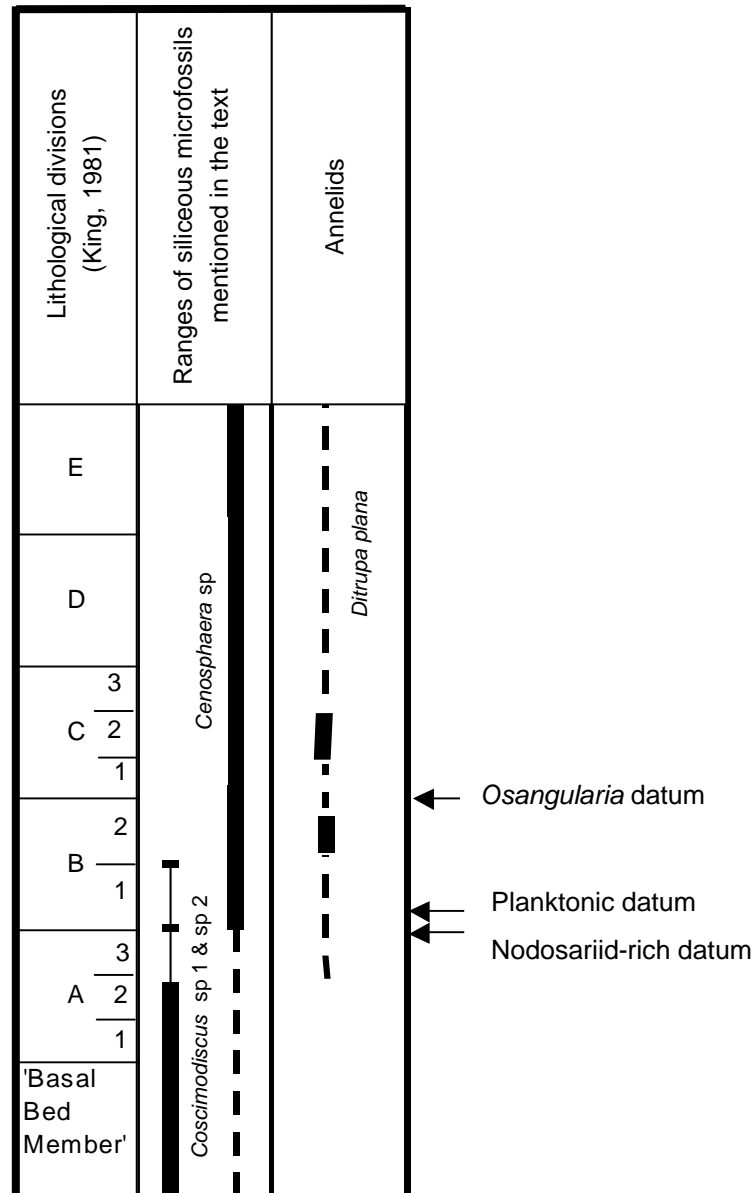


Figure 1. Distribution of stratigraphically useful taxa in the London Clay Formation, mentioned in the text (after King, 1981).

(planktonic datum after Wright, 1972, King, 1981; Nodosariid-rich datum and *Osangularia* datum after King, 1981)

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