

***Mendicodinium morgenrothum*, a new species of dinocyst from the Middle Jurassic, Aalenian to lowermost Bajocian Ness Formation (Brent Group), northern North Sea**

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ABSTRACT - A new dinocyst species *Mendicodinium morgenrothum* is described from the Middle Jurassic, Aalenian to lowermost Bajocian Ness Formation (Brent Group) of the North Viking Graben area of the North Sea. *J. Micropalaeontol.* 14(1): 25–28, April 1995.

INTRODUCTION

The Middle Jurassic, Aalenian to lowermost Bajocian Ness Formation (Brent Group; Deegan & Scull, 1977; Vollset & Dore, 1984) is a sequence of coastal plain, deltaic sediments consisting of interbedded sandstones, mudstones and coals (Scotchman & Johnes, 1990). A palynological investigation of core pieces from this formation in the Amoco (UK) operated Northwest Hutton Field (Block 211/27; Fig. 1) was undertaken as a major part the author's doctoral studies at the University of Sheffield, UK. A low diversity microplankton assemblage from brackish water, lagoonal facies in the lower part of the formation has yielded a previously undescribed species of the dinocyst genus *Mendicodinium* Morgenroth, 1970.

All illustrated specimens are housed at the Centre for Palynological Studies, University of Sheffield, UK.

SYSTEMATIC DESCRIPTION

Division **Pyrrhophyta** Pascher, 1914

Class **Dinophyceae** Fritsch, 1929

Order **Indeterminate**

Family **Indeterminate**

Genus *Mendicodinium* Morgenroth, 1970

Mendicodinium morgenrothum sp. nov.

Pl.1, figs 1–9

Derivation of name. In recognition of the early pioneering palynological research of Peter Morgenroth into Jurassic dinocysts.

Diagnosis. Cysts proximate, outline subcircular. Autophragm scabrate or micropunctate ornamented with scattered to densely distributed verrucae. Tabulation not indicated although cingulum defined by reduced ornament. Archaeopyle epittractal, presumed tAtP.

Holotype. Slide ML 2162, England Finder reference H66/3, Pl.1, fig.1.

Paratype Slide ML 2162, England Finder reference E34/2, Pl.1, fig.2.

Locality and horizon. Amoco UK well 211/27-A22, Northwest Hutton Field, North Sea. Interpreted Aalenian–lowermost Bajocian at 12 685.5' log measured depth (12 674.5' driller's depth) from the released cut (core pieces) at the British Geological Survey, Edinburgh, UK; lower Ness Formation, Brent Group.

Description. Outline is subcircular in dorso-ventral compression. The hypotract is slightly larger than the epittract. The cysts are proximate with autophragm only which is

approximately 1 μm in thickness and sometimes folded. The autophragm is scabrate, micropunctate or microfossulate and ornamented with scattered to densely distributed verrucae which may occur as clusters touching adjacent verrucae but never coalescing or fusing. This ornament occurs on both ventral and dorsal surfaces. It is consistently reduced in the cingular region only, where the autophragm is smooth or scabrate. An omphalus is usually present, attached to the inner surface of the cyst, generally in the sulcal region. There is no evidence of tabulation, apart from the laevo-rotatory cingulum precluding classification of the species at order and family level. The archaeopyle is epittractal, presumed type tAtP. The hypotract and epittract remain attached at the sulcal – presumed 1' plate boundary.

Dimensions. Body diameter at the paracingulum 51–89 μm , mean 62.5 μm , holotype 66 μm ; verrucae 1–2 μm in diameter (although occasionally upto 5 μm) and 1–2 μm in elevation (17 measured specimens).

Comparison. *Mendicodinium morgenrothum* sp. nov. is distinguished from *Mendicodinium granulatatum* Kumar, 1986 which is granulate, from *Mendicodinium microreticulatum* Kumar, 1986 which is microreticulate and from *Mendicodinium caperatum* Brideaux, 1977 which is granulate and microreticulate. It is differentiated from *Mendicodinium groenlandicum* (Pocock & Sarjeant, 1972) Davey, 1979 which is unornamented and from the type species *Mendicodinium reticulatum* Morgenroth, 1970 which is reticulate.

Remarks. This species has been consistently encountered in Ness Formation strata across the North Viking Graben and generally occurs in association with other dinocysts such as *Nannoceratopsis gracilis* Alberti, 1961 emend van Helden, 1977, *Nannoceratopsis senex* van Helden, 1977 and *Mancodinium semitabulatum* Morgenroth, 1970. The presence of *Nannoceratopsis tricerat* Drugg, 1978 in the overlying Ness Formation interval from the type well indicates an age no younger than the lowermost Bajocian *H. discites* Ammonite Zone (Woollam & Riding, 1983; Riding *et al.*, 1991; Mitchener *et al.*, 1992). Regional evidence and the first downhole appearance (FDA) of the Family Phalloecystaceae Dorhofer & Davies, 1980 (or the *Parvocysta* group of dinocysts of Woollam & Riding, 1983) in the underlying fully marine upper Drake Formation (Dunlin Group) suggests an age no older than the latest Toarcian or earliest Aalenian for the overlying

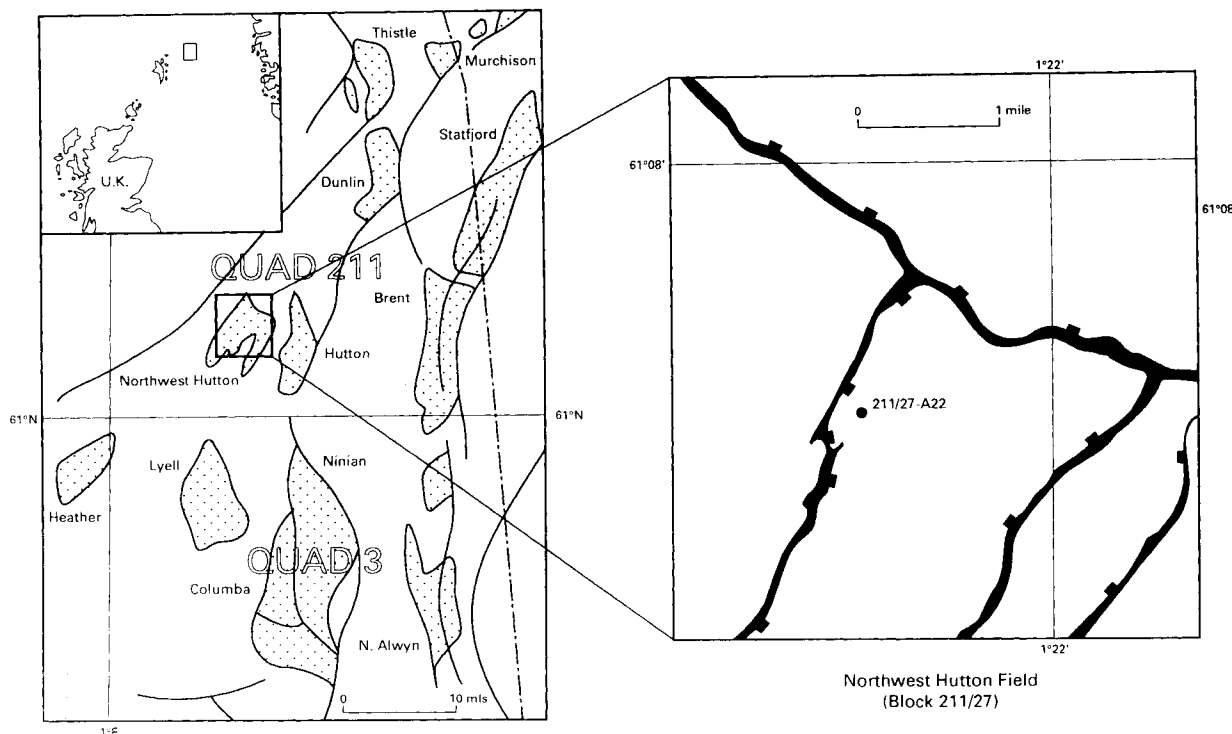


Fig. 1. Location map of the Northwest Hutton Field, top Brent Group structure map and location of well 211/27-A22 (after Scotchman & Johns, 1990).

deltaic Brent Group (Woollam & Riding, 1983; Prauss, 1989; Riding *et al.*, 1991). However, this latter datum may be debatable as there is a major change in facies associated with the deposition of the more brackish Brent Group.

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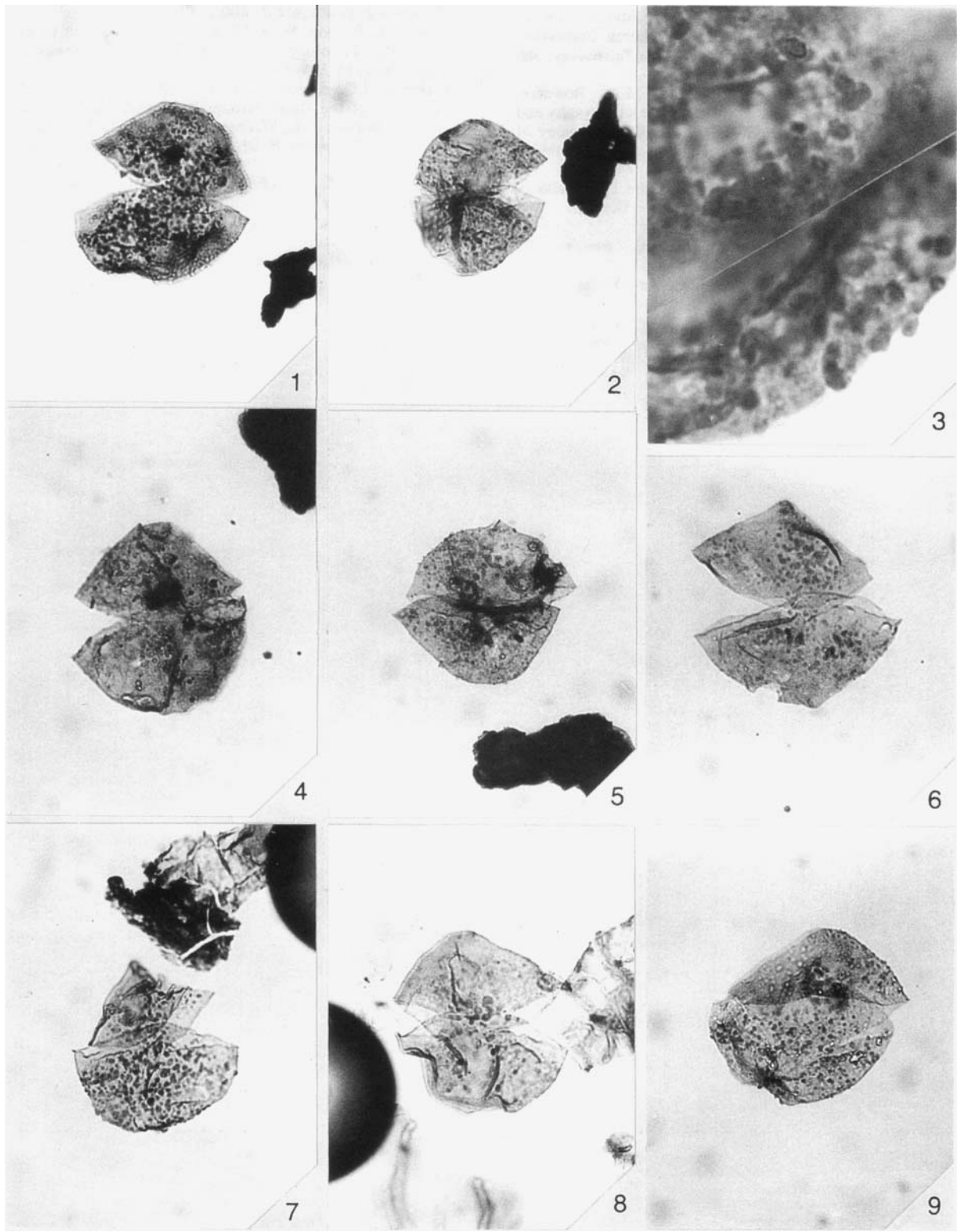
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Explanation of Plate 1

All magnifications are $\times 450$ except fig. 3, all depths are log measured depth. *Mendicodinium morgenrothum* sp. nov. **Figs 1, 3.** Holotype. UK well 211/27-A22 (Northwest Hutton Field), 12 685.5' (core piece), slide ML 2162, EF H66/3 (Fig. 3 illustrates detail of the hypocystal ornamentation at $\times 2500$ magnification). **Fig. 2.** Paratype. UK well 211/27-A22, 12 685.5' (core piece), slide ML 2162, EF E34/2. **Fig. 4.** UK well 3/4a-12 (Strathspey Field), 10 086.0' (core piece), slide ML 2165, EF N60/2. **Fig. 5.** UK well 3/8a-9A (Columba Field), 11 943.5' (core piece), slide ML 2167, EF H31/0. **Fig. 6.** UK well 3/3-C13 (Ninian Field), 12 627.5' (core piece), slide ML 2166, EF F67/2. **Fig. 7.** UK well 211/27-A22, 12 685.5' (core piece), slide ML 2164, EF Q60/3. **Fig. 8.** UK well 211/27-A22, 12 685.5' (core piece), slide ML 2163, EF H35/1. **Fig. 9.** UK well 211/27-A22, 12 685.5' (core piece), slide ML 2164, EF C60/1.



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