

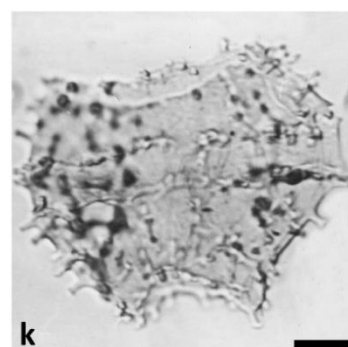
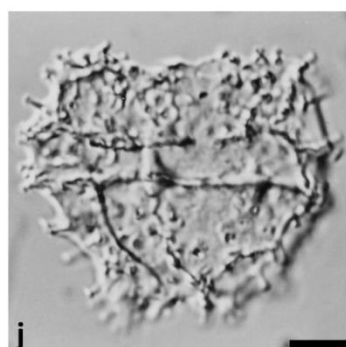
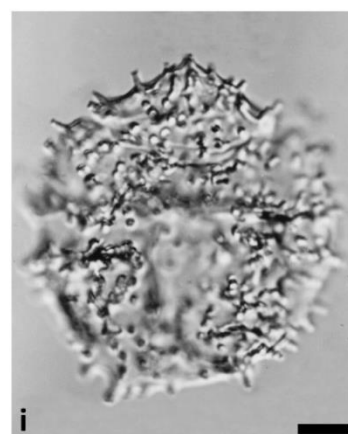
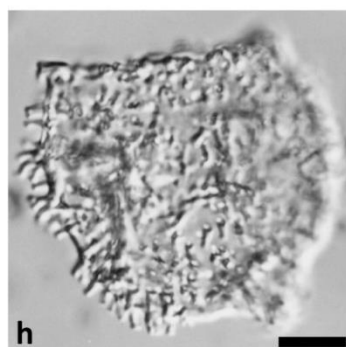
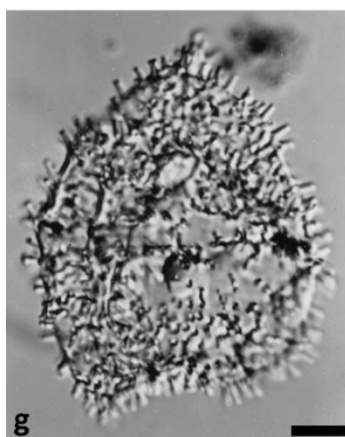
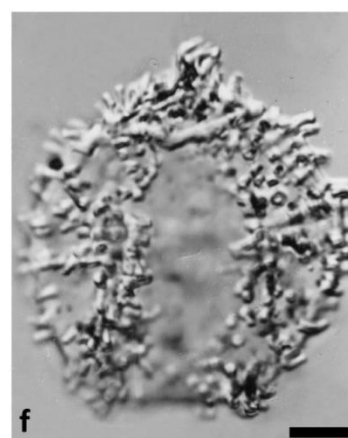
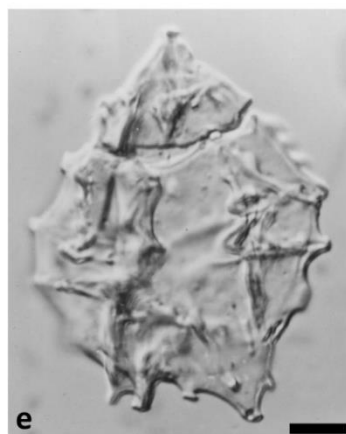
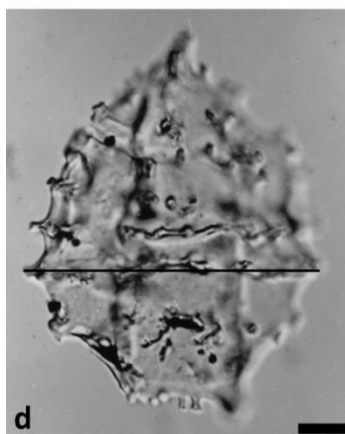
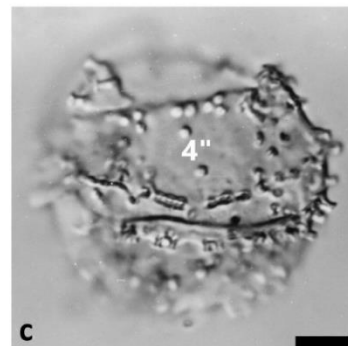
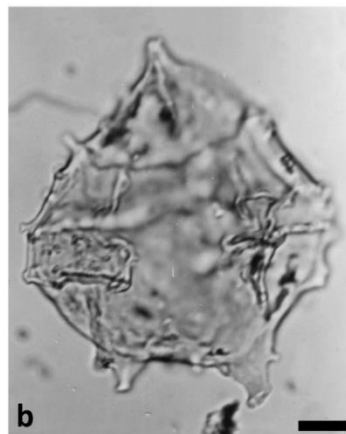
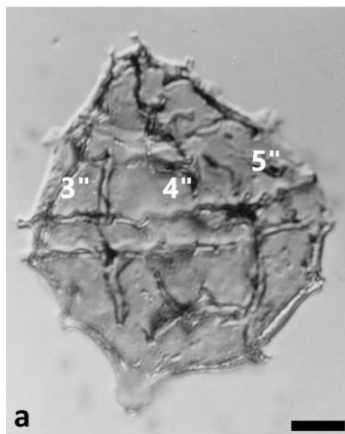
## **SUPPLEMENT 1, S1 PLATES 1-3**

These plates and the photographs in Supplement 2 were compiled by Lucy Costa in 1985. The illustrated taxa were informally presented at the Third International Conference on Modern and Fossil Dinoflagellates (Bedford College, Egham, August 1985) but, for a number of reasons, the intended paper was not completed for publication at the time.

All the material is from grey-green claystones of the Kolmule Formation in exploration wells from Quadrant 7120 of the Barents Sea (Norway). Unfortunately, no record was kept of the palynological slides from which the photographs were taken, which renders these plates unsuitable for a formal publication. The specimens illustrated, however, seem too good to be kept in an attic.

All photographs except Plate 3, Figure i, were taken at x730 magnification, the detail on Plate 3 Figure i was probably taken at a x1280 magnification.

# S1-Plate 1



## S1-Plate 1

**Figures a–e, k:** *Epelidosphaeridia manifesta* sp. nov.

**Figure a**, dorsal view of cornucavate specimen with few processes and tabulation expressed mainly by low sutural/penitabular ridges.

**Figure b**, ventral view, showing moderately indented, wide sulcus, and unindented, slightly offset cingulum without any trace of a cingular fold.

**Figure c**, oblique dorsal view with high focus on precingular plate 4'' showing the bilaterally symmetrical, wide, planate anterior margin typical of a bipesioid epicystal configuration.

**Figure d**, ventral view with low focus on dorsal face of specimen with moderate number of suturally/penitabularly aligned short, stout processes; sutural ridges confined to the cingular margins; and narrow hypocystal pericoel linking the 2 antapical horns.

**Figure e**, ventral view, high focus on longitudinal periphragm folds along the sulcal margins.

**Figure k**, ventral view, low focus, of specimen with greater processes density and reduced antapical horns, which suggest a morphological transition to *E. spinosa*, but sutural/penisutural ornament alignment and cavation within the left antapical horn are still clear.

**Figures f–k:** *Epelidosphaeridia spinosa*.

**Figure f**, ventral view, high focus on the broad, moderately indented, wide and straight sulcus flanked by folds; low folds also along the cingular margins.

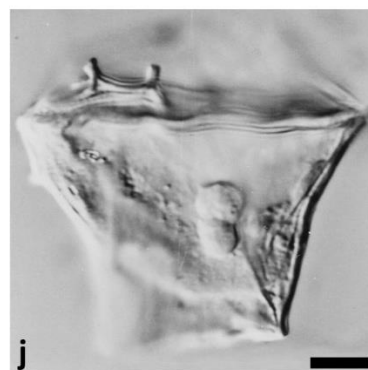
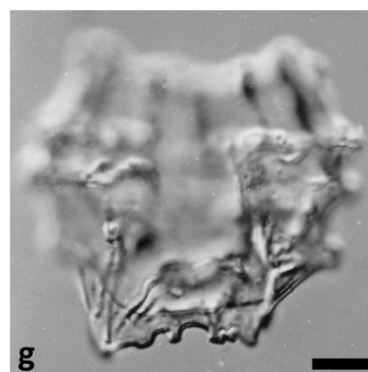
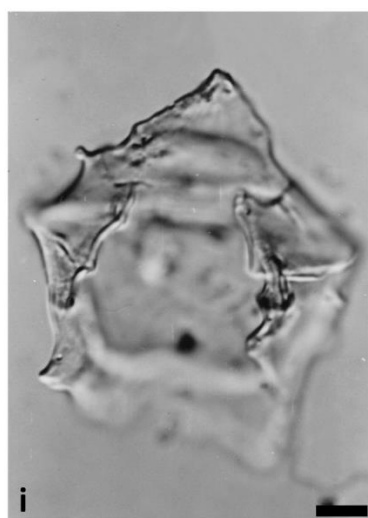
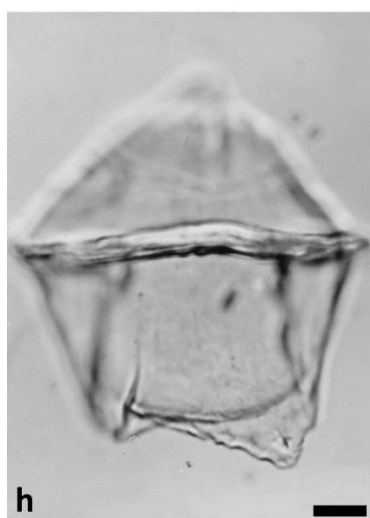
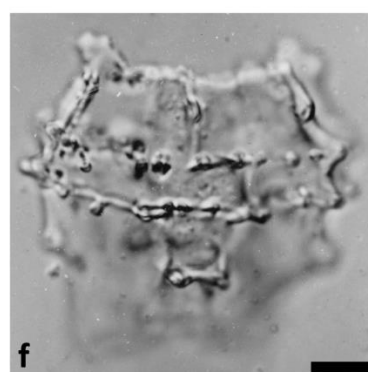
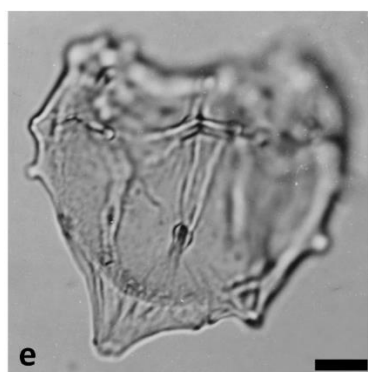
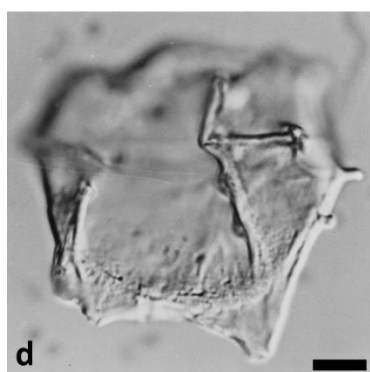
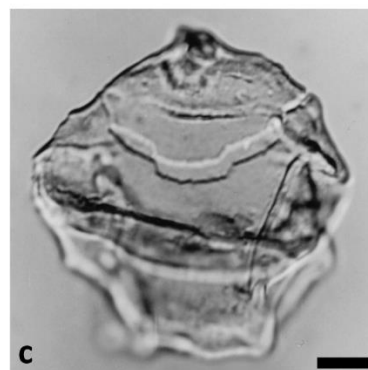
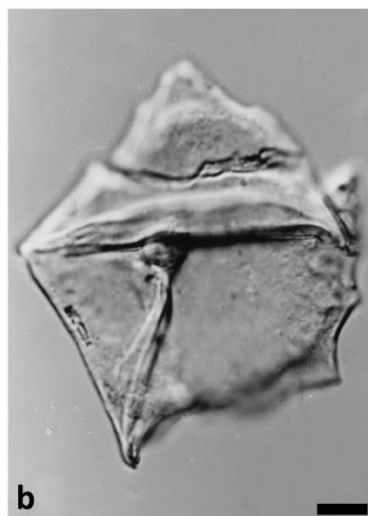
**Figure g**, dorsal view, high focus of specimen with dense cover of atabular, rod-like processes. The broad, centrally located and planate anterior margin of plate 4'' is clear on the archeopyle suture.

**Figure h**: ventral view, low focus on dorsal face.

**Figure i**, dorsal view, the adnate operculum shows a weakly tripartite.

**Figure j**, dorsal view of specimen with sparser ornament and a well defined, tabulated cingulum, displaying a morphology transitional with *E. manifesta*.

## S1-Plate 2



## S1-Plate 2

**Figures a–c, h–j:** *Ovoidinium epelidosphaeroides* sp.nov.

**Figures a–c**, dorsal views, displaying prominent cingular flange, absence of ornament, variably developed cavation, and tripartite dorsal archeopyle suture.

**Figure h**, ventral view with partial focus on a broad sulcus flanked by folds; dorsal face with prominent cingular flange also partially in focus.

**Figure j**, dorsal view, with low focus showing broad sulcus with large accumulation bodies on ventral face. Two distinct processes can be seen on left side of the cingulum.

**Figures d–e, i:** *Ovoidinium epelidosphaeroides* sp.nov., forms transitional with *Epelidosphaeridia manifesta* sp.nov. showing less developed, incomplete cingular flanges and slightly more numerous processes.

**Figure d**, ventral view with wide sulcus, narrowing anteriorly, flanked by low folds; moderately offset cingulum.

**Figure e**, dorsal view, devoid of a cingular flange, and with slightly more numerous processes, especially along the cingulum.

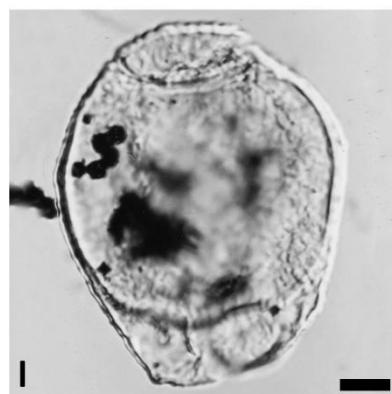
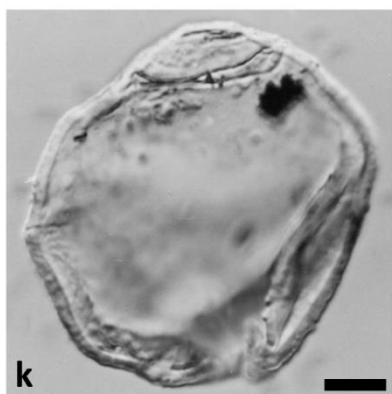
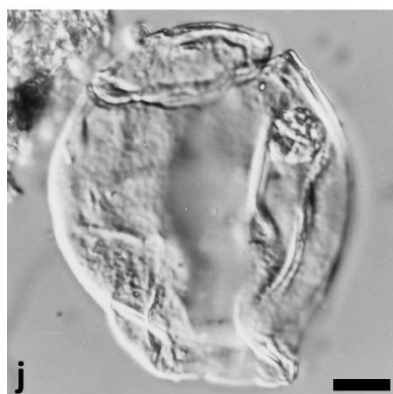
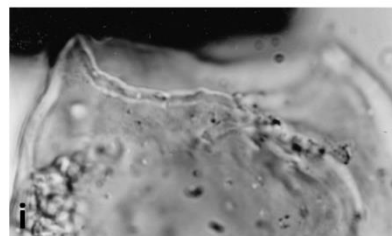
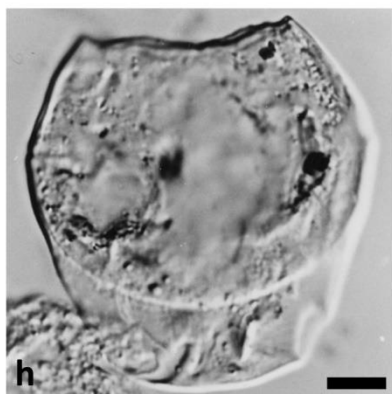
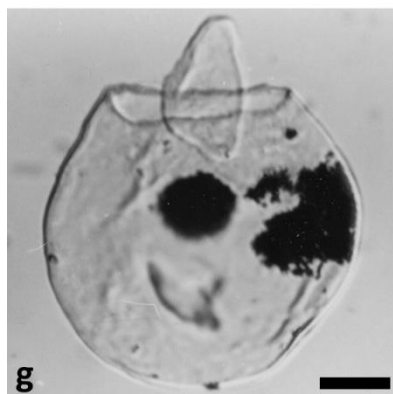
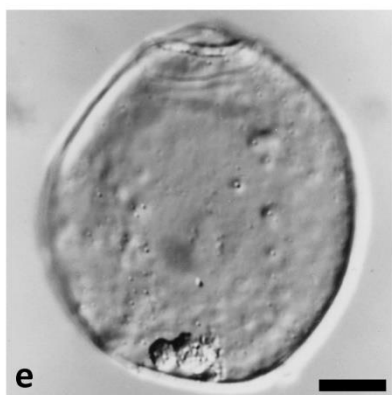
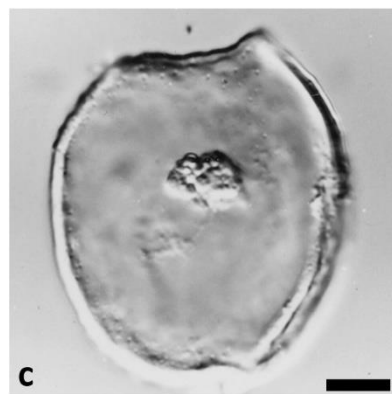
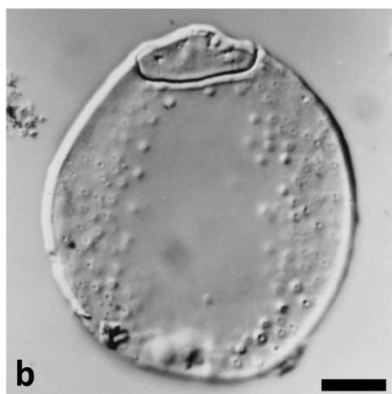
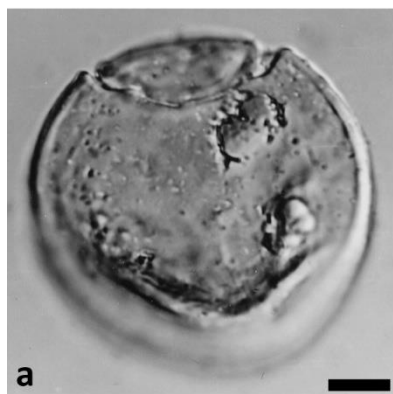
**Figure i**, ventral view, with weakly denticulate folds along the sulcus, a poorly developed cingular flange can be seen by transparency on the left side.

**Figures f–g:** *Epelidosphaeridia manifesta*, dorsal and ventral views of the same specimen.

**Figure f**, slightly latero-dorsal view showing tabulation expressed by sutural/penitabular ornament; wide, little indented tabulated cingulum (5 cingular plates are often distinct) without a flange, and cavation confined to the antapical horns.

**Figure g**, low focus showing ventral view, showing broad, with relatively wide, straight sulcus; the two antapical plates 1<sup>'''</sup> and 2<sup>'''</sup> are just about discernable below the sulcus.

# S1-Plate 3



## S1-Plate 3

**Figures a – c, e-g, i, k:** *Sindridinium borealis* gen.et sp.nov.

**Figure a**, ventral view, indicated by the accumulation bodies (omphali) appearing in sharp focus.

**Figures b** and **e**, dorsal and ventral views of a same specimen; (**b**) shows a wide, symmetrical, subrectangular dorsal archeopyle suture; (**e**) shows an unusually reduced archeopyle with a curved suture on ventral face.

**Figures c** and **f**, ventral and dorsal views of a same specimen; (**c**) ventral face with accumulation body, (**f**) dorsal view showing atabular verrucose ornament, the archeopyle suture is almost straight and symmetrical on both faces.

**Figure g**, dorsal view displaying a symmetrical, subrectangular dorsal archeopyle suture, and an almost straight ventral suture; the operculum, which remains adhered, shows a wide, symmetrical, weakly convex edge with two very short straight sides, interpreted as being the dorsal edge, and a narrower, strongly convex/subtriangular symmetrical ventral edge.

**Figure i** *Sindridinium borealis* gen. et. sp. nov., detail of the archeopyle suture in ventral view showing 2 closely adpressed walls (in focus on the left side of the picture).

**Figure k**, ventral view with ambital focus of specimen with adnate operculum. The operculum shows a rounded ventral margin, and a subrectangular dorsal margin.

**Figures d, h, j** and **l:** *Sindridinium anaanae* gen. et sp. nov.

**Figure d**, dorsal view of specimen with a broadly rounded left antapical lobe on the hypocyst.

**Figure h**, ?ventral view of antapically symmetrical specimen.

**Figure j**, ventral view showing low folds along the sulcus and an asymmetrical hypocyst with an incipient development of a left antapical horn.

**Figure l** dorsal view of specimen with a weakly asymmetrical hypocyst, the scabrose texture of the periphragma is possibly due to bacterial action, evidence of which is also seen on some of the other illustrated specimens.