

SUPPLEMENT:  
POLLEN GRAINS AND SPORES FROM THE UPPER  
VARDEKLØFT FORMATION (JURASSIC),  
JAMESON LAND, EAST GREENLAND

By  
MARJORIE D. MUIR

### **Abstract**

A brief study of the pollen grains and spores in the two horizons of the Upper Vardekløft Formation (described in the accompanying paper) shows them to consist dominantly of long-ranging forms, not capable of providing close stratigraphic dates. 13 species were recognised.

In his study of the microplankton assemblages from two horizons in the Upper Vardekløft Formation (described in the accompanying paper), Dr. W. A. S. SARJEANT encountered a number of spores and pollen, photographs of which were sent to me for preliminary study.

From the upper horizon, 275 ft. below the base of the Koch Fjeld Formation (considered by Dr. SARJEANT to be Middle Callovian), the following species were recognised:

*Exesipollenites tumulus* BALME, 1957. Range: M.-U. Jurassic (Pl. 8, fig. 5).

*Pteruchipollenites thomasi* COUPER, 1958. Range: Jurassic (Pl. 9, fig. 3).

*Abietineaepollenites microalatus* (POTONIÉ, 1931) POTONIÉ, 1951. Range: Jurassic-Tertiary (Plate 9, fig. 1).

*Laevigatisporites* sp.

*Perinopollenites elatoides* COUPER, 1958. Range: Jurassic-L. Cretaceous.

*Vitreisporites pallidus* (REISSINGER) NILSSON, 1958. Range: ?Permian, def. Jurassic-L. Cretaceous (Plate 8, fig. 3).

*Dictyophylliidites harrisii* COUPER, 1958. Range: M. Jurassic-U. Jurassic (Callovian).

In addition, crushed bisaccate pollen of other species were present which could not be certainly identified, together with fragments of coniferous wood.

From the lower horizon, 295 ft. below the base of the Koch Fjeld Formation (considered by Dr. SARJEANT to be Bathonian), the following species were recognised:

*Calamospora mesozoica* COUPER, 1958. Range: Jurassic (Lias-Bathonian).

*Lycopodiumsporites clavatoides* COUPER, 1958. Range: Jurassic-L. Cretaceous (Plate 8, fig. 1).

*Perinopollenites elatoides* COUPER, 1958. Range: Jurassic-L. Cretaceous (Plate 8, fig. 2).

*Abietinaepollenites microalatus* (POTONIÉ, 1931) POTONIÉ, 1951. Range: Jurassic-Tertiary.

?*Araucariacites australis* COUPER, 1958. Range: Jurassic-L. Cretaceous (Plate 8, figs 4, 6).

*Eucommiidites troedssonii* ERDTMAN, 1948. Range: Jurassic-M. Cretaceous (Plate 9, fig. 5).

*Neoraistrickia gristhorpensis* (COUPER, 1958) TRALAU, 1968. Range: M. Jurassic (Plate 9, fig. 4).

*Murospora bicollateralis* (ROGALSKA, 1956) POCOCK, 1971. Range: M. Jurassic.

*Osmundacidites wellmannii* COUPER, 1953: Range: Jurassic-L. Cretaceous (Plate 9, fig. 2).

Cf. *Verrucosisporites obscurilaesuratus* POCOCK, 1962. This species is known from the Barremian of Canada; its identity with the Greenland pollen is questionable, since the ornamentation of the latter is markedly less dense. (Plate 9, fig. 6).

The majority of the forms represented are thus long-ranging, but their ranges show general agreement with the dates assigned by Dr. SARJEANT. The pollen assemblage cannot be considered of sufficient stratigraphic promise to merit any more extended study.

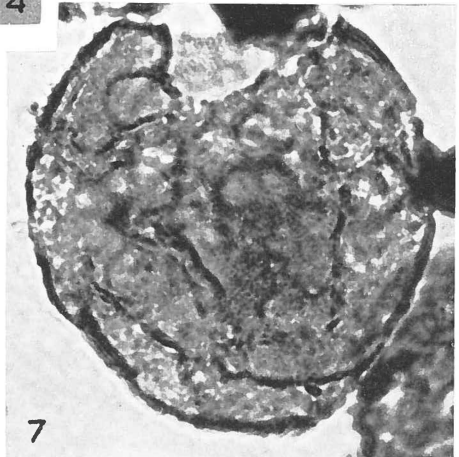
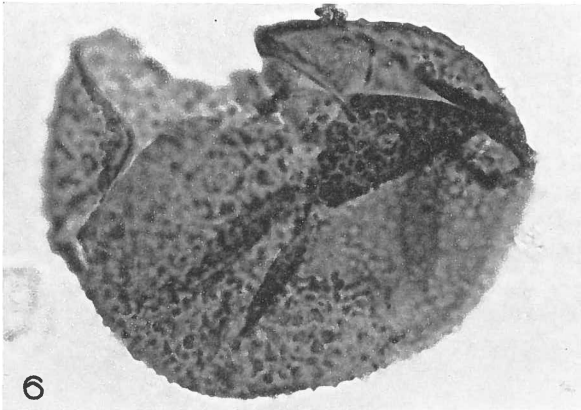
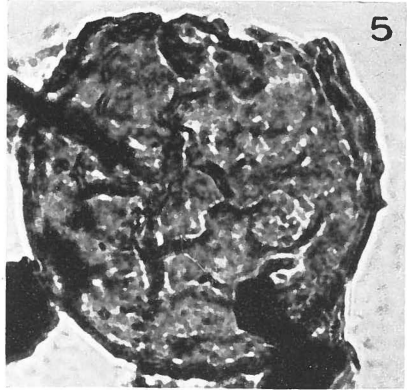
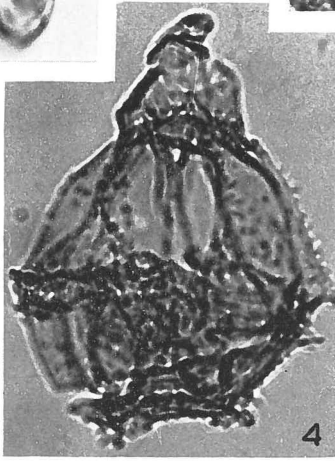
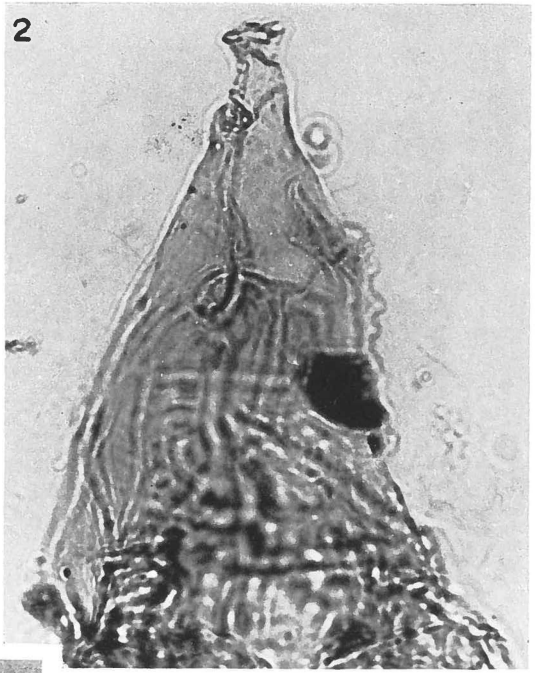
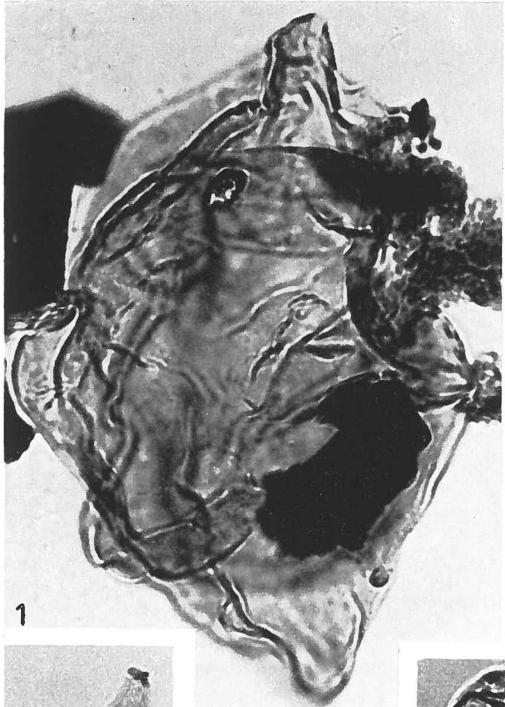
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PLATES

## Plate 1

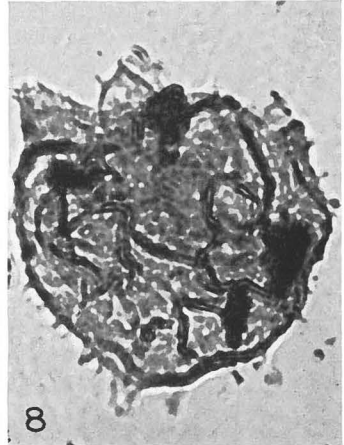
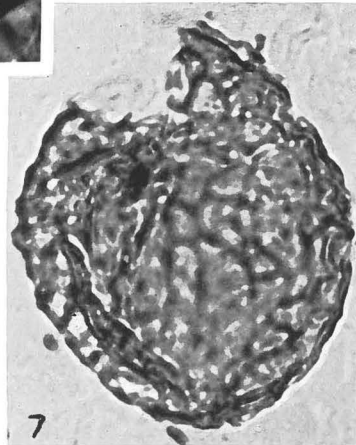
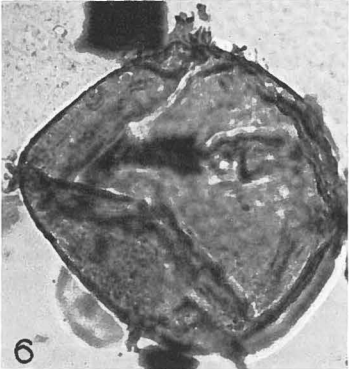
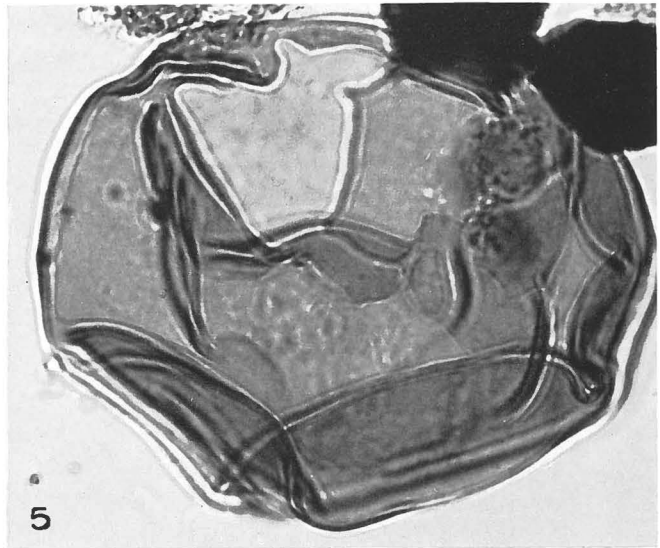
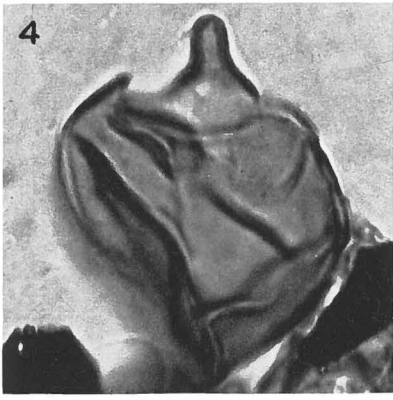
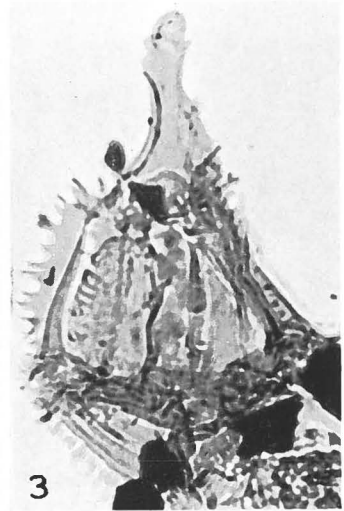
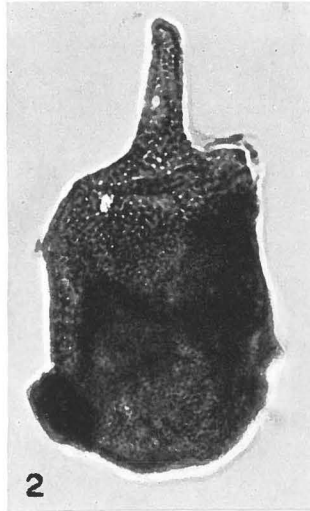
- Figure 1. *Seriodinium* sp. Specimen GR426/12/21, upper horizon. Xc. 1250.
- Figure 2. *Gonyaulacysta jurassica* (DEFL.). An example with an unusually broadbased apical horn. Specimen GR426/10/9, lower horizon. Xc. 1800.
- Figure 3. *Gonyaulacysta jurassica* (DEFL.). A typical form in lateral view: the precingular archaeopyle is clearly visible at the right. Specimen GR425/13/4, lower horizon, Xc. 1000.
- Figure 4. *Gonyaulacysta jurassica* (DEFL.). A specimen having an apical horn so broad as to almost constitute an apical pericoel. Specimen GR425/11/5, lower horizon. Xc. 1000.
- Figure 5. *Meiourogonyaulax* aff. *deflandrei* SARJEANT. Specimen GR426/6/19, upper horizon. Xc. 1000.
- Figure 6. *Tenua* aff. *hystrix* EISENACK. Specimen GR425/3/8, upper horizon, Xc. 1000.
- Figure 7. ?*Meiourogonyaulax* sp., in ventral view. Specimen GR425/12/3, upper horizon. Xc. 800.





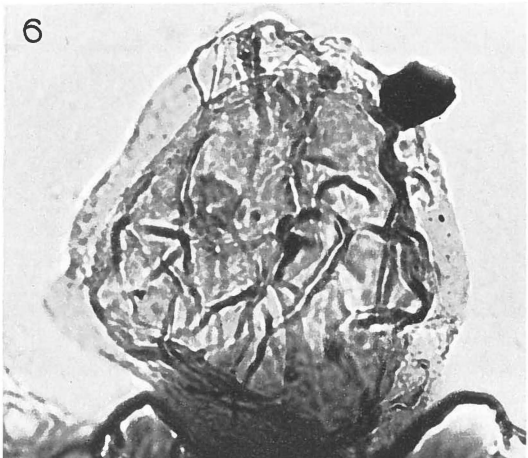
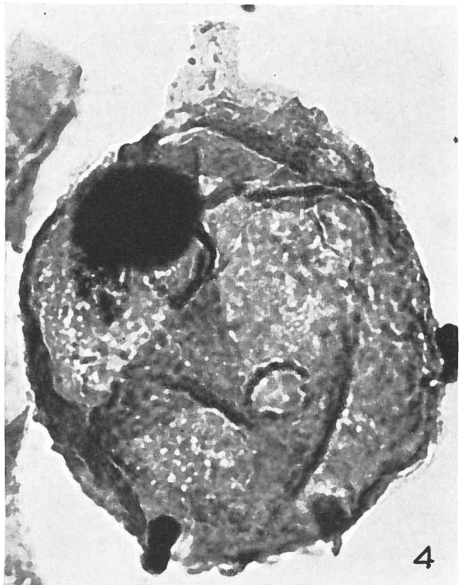
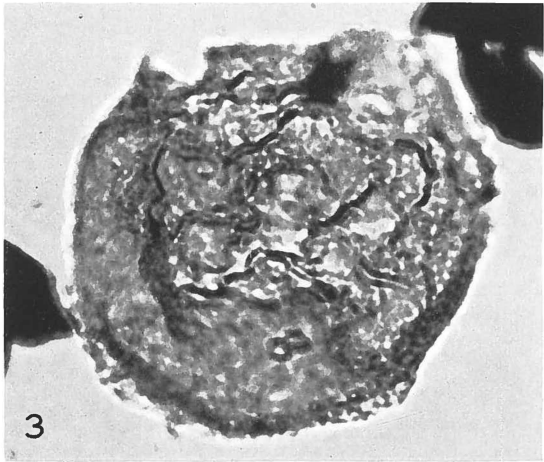
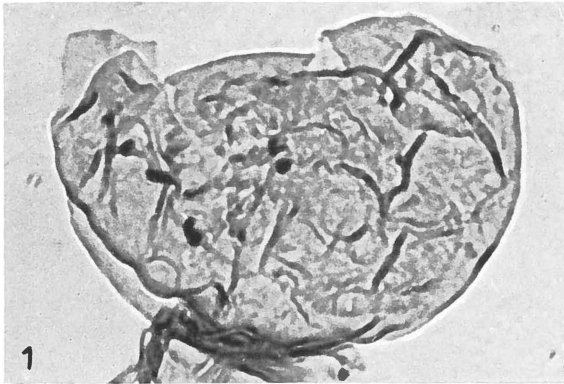
## Plate 2

- Figure 1. *G. eisenacki oligodentata* COOKSON & EISENACK, 1958, in dorsal view showing the archaeopyle and antapical openings. Specimen GR426/6/16, upper horizon. Xc. 800.
- Figure 2. *Pareodinia groenlandica* sp. nov. Specimen GR425/12/7, lower horizon. Xc. 750.
- Figure 3. *Gonyaulacysta jurassica* var. *longicornis* DEFL. The crests are unusually high for this variety. Specimen GR426/6/8, upper horizon. Xc. 800.
- Figure 4. *Pareodinia ceratophora* var. *scopaeus* nov. The holotype, showing the intercalary archaeopyle. Xc. 1250.
- Figure 5. *Chystroeisphaeridia chyrooides* (SARJEANT), showing the apical archaeopyle with its sulcal notch. Specimen GR426/5/78, upper horizon. Xc. 1250.
- Figure 6. *Gonyaulacysta* aff. *cladophora* (DEFL.). Specimen GR426/11/11. Xc. 500.
- Figure 7. *Valensiella ovula* (DEFL.). Specimen GR426/11/30, upper horizon. Xc. 800.
- Figure 8. *Meiourogonyaulax* cf. *callomonii* SARJEANT. Specimen GR425/7/17. Xc. 800.



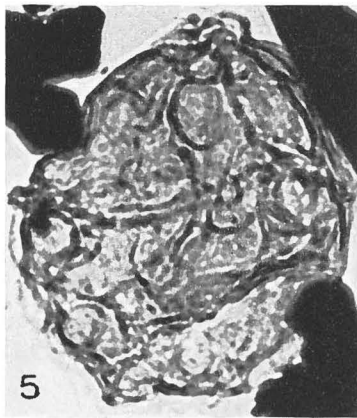
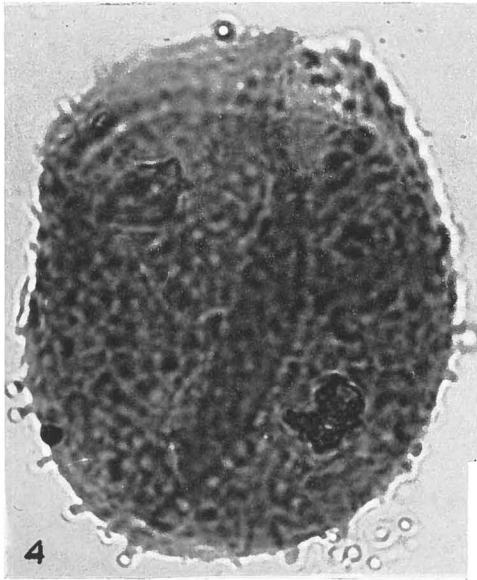
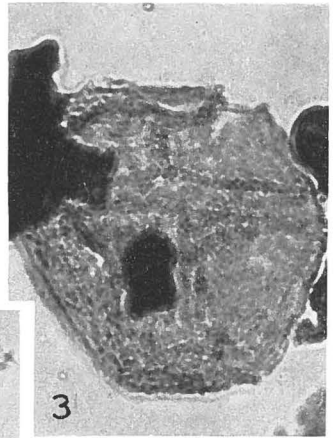
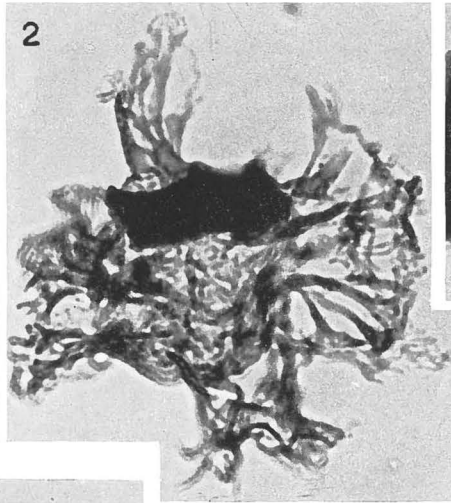
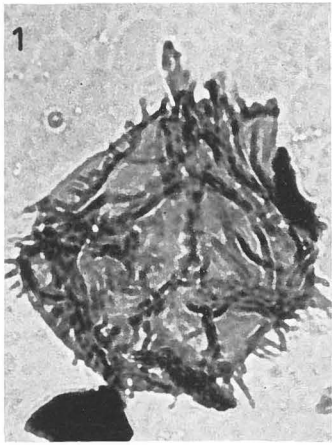
### Plate 3

- Figure 1. *Chytroeisphaeridia chytroeides* (SARJEANT). A specimen in which folding inward of the margins gives the impression that the archaeopyle is larger than its true size. Xc. 800.
- Figure 2. *Leiosphaeridia hyalina* (DEFL.). Specimen GR426/11/4, upper horizon. Xc. 1000.
- Figure 3. *Chytroeisphaeridia dictydia* sp. nov. Specimen GR426/3/10. Xc. 800.
- Figure 4. *Pareodinia apotomocerastes* sp. nov. The holotype, specimen GR425/2/15, lower horizon. Xc. 1100.
- Figure 5. *Netrelytron* aff. *stegastum* SARJEANT. Specimen GR426/12/24, upper horizon. Xc. 800.
- Figure 6. *Scriniodinium* aff. *galeritum* (DEFL.). Specimen GR426/8/13, upper horizon. Xc. 1000.



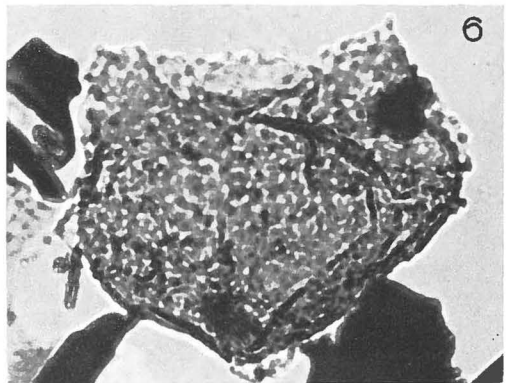
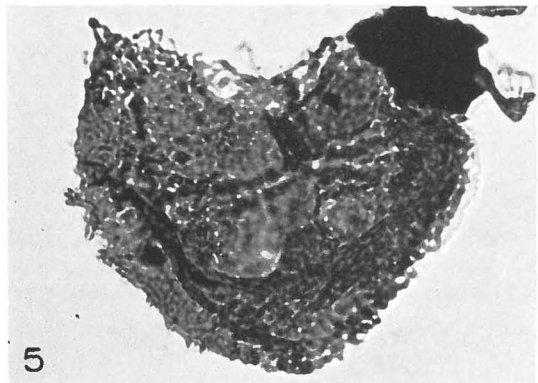
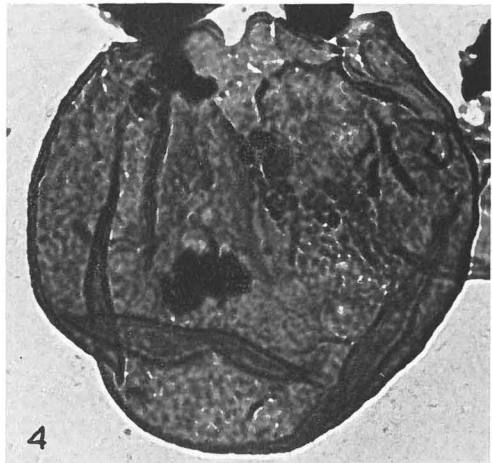
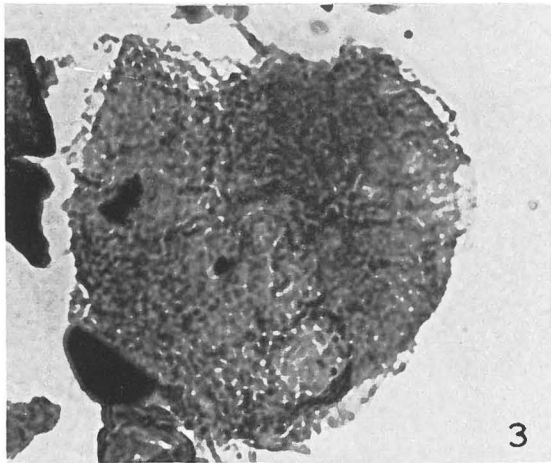
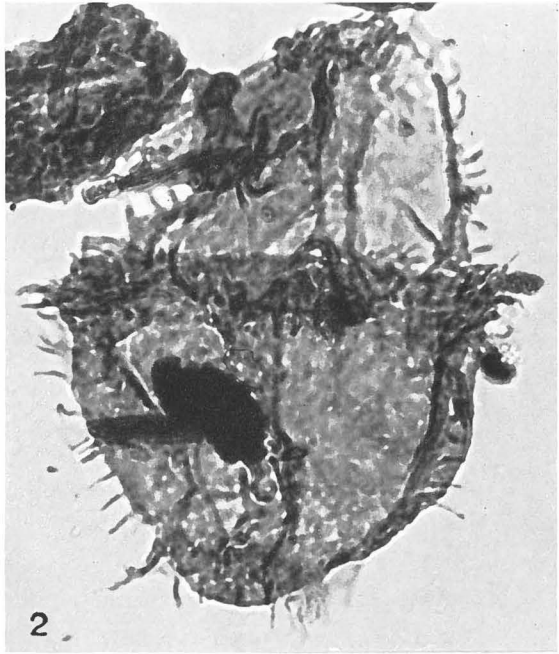
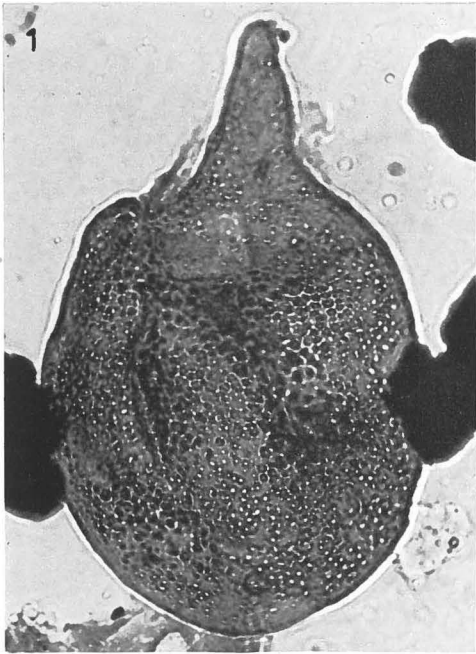
#### Plate 4

- Figure 1. *Gonyaulacysta* aff. *jurassica* (DEFL.), in ventral view. Specimen GR425/3/24, lower horizon. Xc. 750.
- Figure 2. *Polystephanephorus* cf. *speciosus* (ALBERTI). Specimen GR425/12/8A, lower horizon. Xc. 800.
- Figure 3. *Meiourogonyaulax cantrellii* sp. nov. The holotype, in dorsal view. Specimen GR425/6/37, lower horizon. Xc. 800.
- Figure 4. *Tenua* cf. *pilosa* (EHR.). Specimen GR425/6/52, lower horizon. Xc. 1800.
- Figure 5. *Scriniodinium* cf. *parvimarginatum* (COOKSON & EISENACK). Specimen GR425/7/50, lower horizon. Xc. 000.
- Figure 6. ?*Psaligonyaulax* cf. *apaleta* (COOKSON & EISENACK). Specimen GR425/3/99, lower horizon. Xc. 700.
- Figure 7. *Meiourogonyaulax strongylos* sp. nov. The holotype, specimen GR425/3/13, lower horizon. Xc. 800.
- Figure 8. *Pareodinia ceratophora* DEFL. with operculum still attached (and slightly folded). Specimen GR425/12/4, lower horizon. Xc. 800.
- Figure 9. *Pareodinia prolongata* SARJEANT. Specimen GR425/3/10, lower horizon. Xc. 750.



## Plate 5

- Figure 1. *Pareodinia groenlandica* sp. nov. The holotype, specimen GR425/3/10 A, lower horizon. Xc. 1100.
- Figure 2. *Hystrichogonyaulax* cf. *cornigera* (VALENSI). Specimen GR425/6/22 m, lower horizon. Xc. 800.
- Figure 3. *Meiourogonyaulax decapitata* (W. WETZEL), emend., in ventral view. Specimen GR425/1/29, lower horizon. Xc. 800.
- Figure 4. *Meiourogonyaulax* sp. in ventral view. Specimen GR425/8/11, lower horizon. Xc. 800.
- Figure 5. *Meiourogonyaulax callomonii* sp. nov. The holotype in dorsal view. Specimen GR425/7/37, lower horizon. Xc. 800.
- Figure 6. *Meiourogonyaulax* cf. *callomonii* SARJEANT, in oblique lateral view. Specimen GR425/6/25, lower horizon. Xc. 800.





## Plate 6

All photographs are taken by phase contrast.

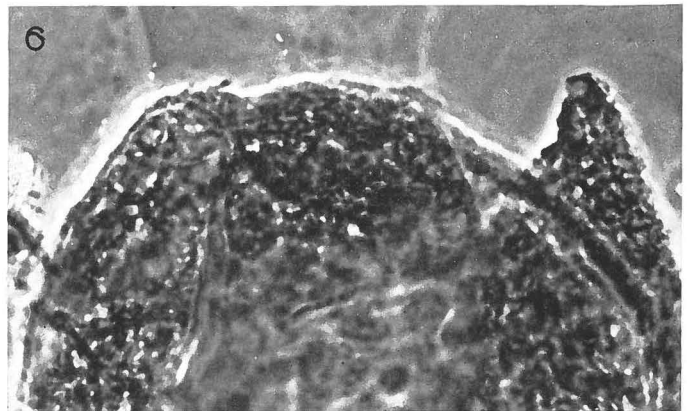
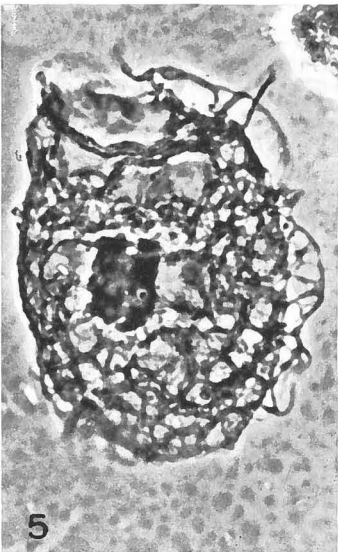
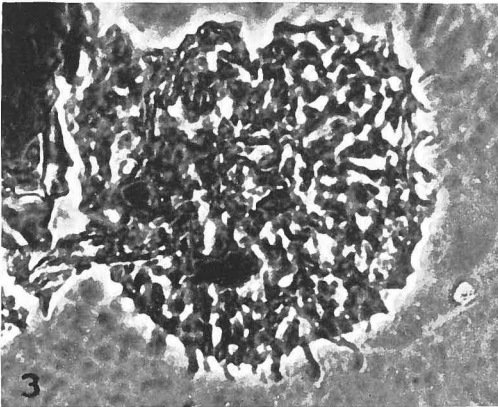
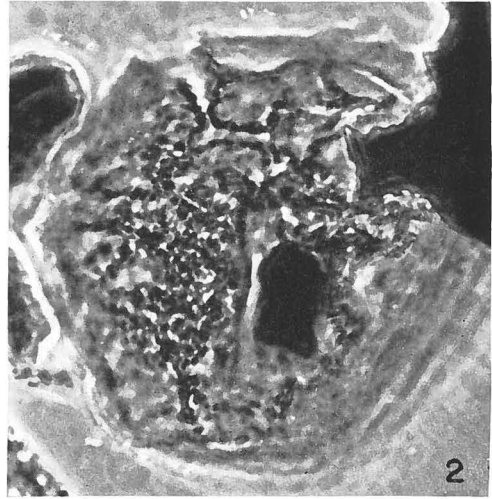
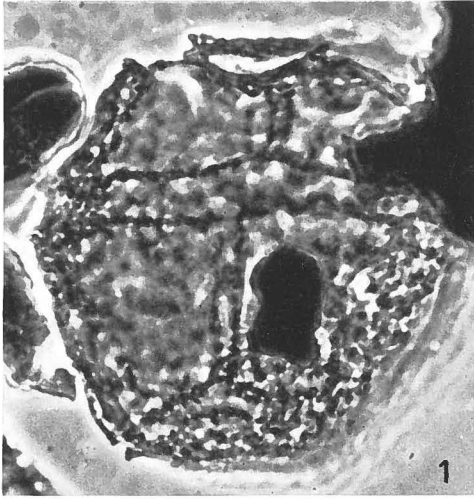
Figures 1–2. ?*Meiourogonyaulax cantrellii*, sp. nov., in dorsal (1) and ventral (2) views. The holotype, specimen GR425/6/37. Xc. 1100.

Figure 3. *Tenua rioulti* SARJEANT. Specimen GR425/6/35, lower horizon. Xc. 800.

Figure 4. *Pareodinia* cf. *apotomocerastes* SARJEANT. Specimen GR426/8/4, upper horizon. Xc. 1100.

Figure 5. Aff. *Valensiella* sp. Specimen GR425/2/27, lower horizon. Xc. 1250.

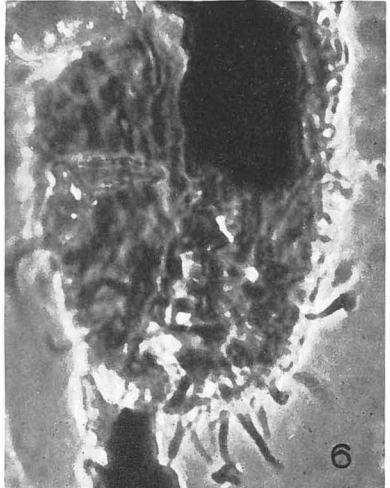
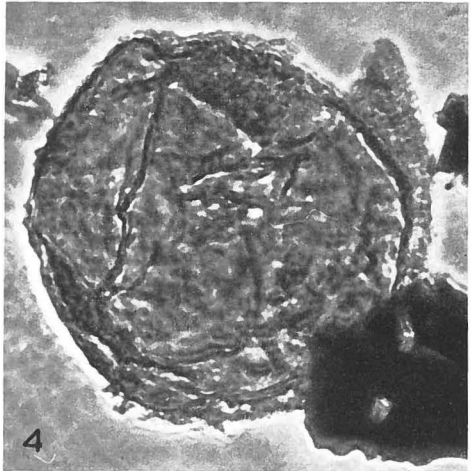
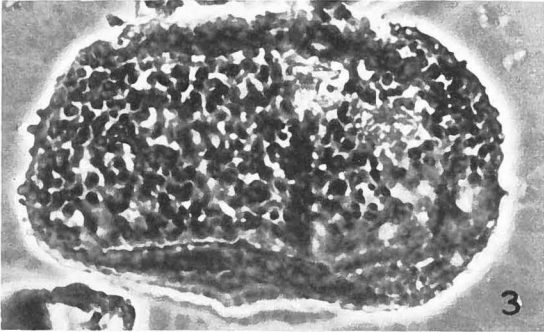
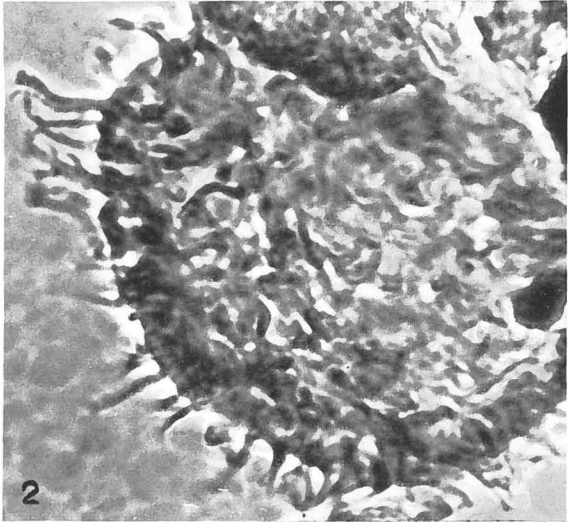
Figure 6. *Chytroeisphaeridia dictydia* sp. nov. in close-up to show surface ornament and the form of the archaeopyle. The holotype, specimen GR426/8/9, upper horizon. Xc. 1250.



## Plate 7

All photographs are taken by phase contrast.

- Figure 1. ?*Gonyaulacysta whatleyi* sp. nov. The holotype, specimen GR425/8/1, lower horizon. Xc. 1250.
- Figure 2. *Tenua rioulti* SARJEANT, showing details of the processes. Specimen GR 426/8/4, upper horizon. Xc. 1250.
- Figure 3. *Tenua* aff. *hystrix* EISENACK; a crushed specimen on which the details of the spines are well seen. Specimen GR425/6/38, lower horizon. Xc. 800.
- Figure 4. *Chytroeisphaeridia dictydia* sp. nov. The holotype, specimen GR426/8/9, upper horizon. Xc. 800.
- Figure 5. *Wanaea digitata* COOKSON & EISENACK, showing the structure of the fringe. Specimen GR425/4/26, upper horizon. Xc. 1250.
- Figure 6. *Prolixosphaeridium* aff. *deirense* DAVEY, *et.al.* Specimen GR426/5/3, upper horizon. Xc. 1100.



## Plate 8

Figure 1. *Lycopodiumsporites clavatoides* COUPER, 1958. Specimen GR425/7/31 A.

Figure 2. *Perinopollenites elatoides* COUPER, 1958. Specimen GR425/6/56 A.

Figure 3. *Vitreisporites pallidus* (REISSINGER) NILSSON, 1958. Specimen GR426/7/2 A.

Figure 4. ?*Araucariacites australis* COUPER, 1958. Specimen GR425/8/2 A.

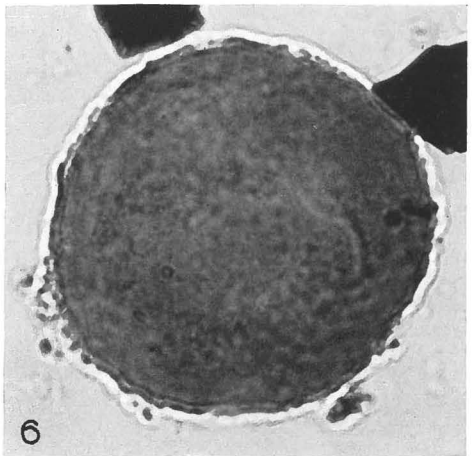
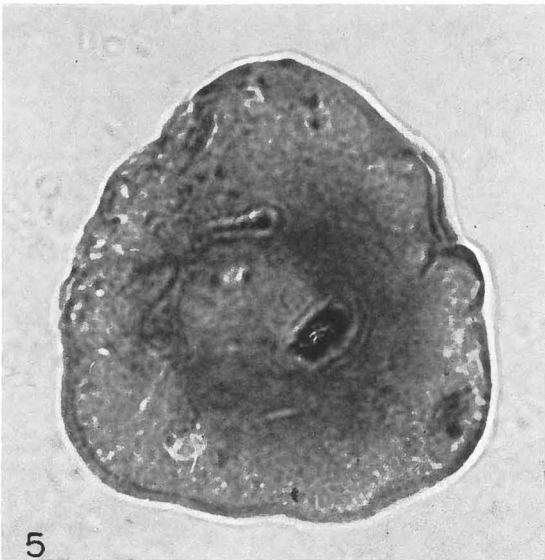
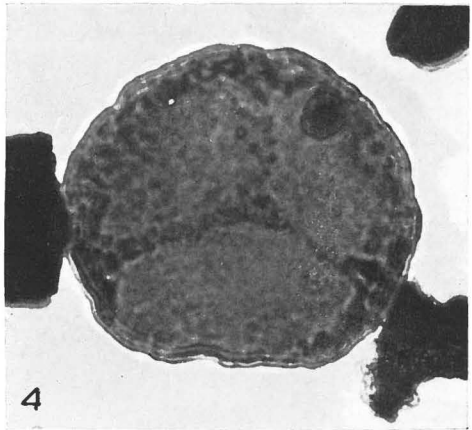
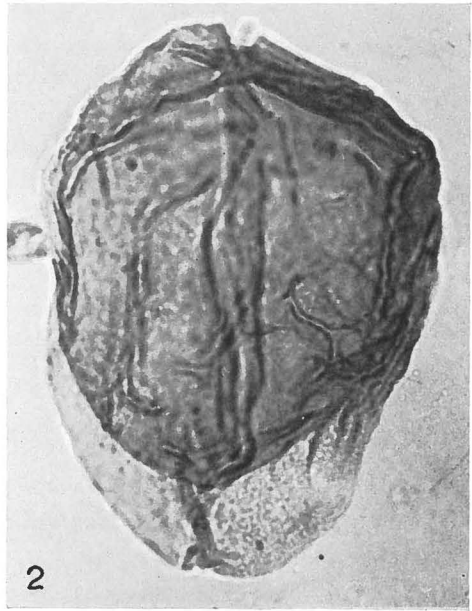
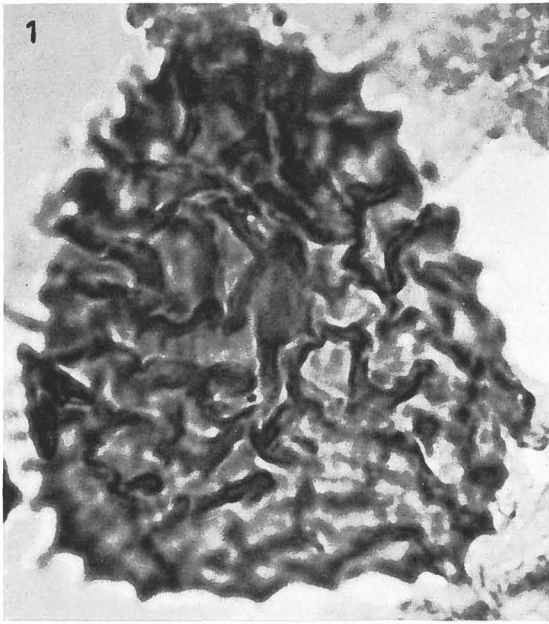
Note: Though COUPER, in his original description, did not record a triradiate mark, such a mark is not uncommon.

Figure 5. *Exesipollenites tumulus* BALME, 1957. Specimen GR426/5/8 A.

Figure 6. *Araucariacites australis* COUPER, 1958. Specimen GR425/6/58 A.

Specimen without a triradiate mark.

Magnification Xc. 1250.



## Plate 9

- Figure 1. *Abietinaepollenites microalatus* (POTONIE, 1931), POTONIE, 1951. Specimen GR426/6/10 A.
- Figure 2. *Osmundacidites wellmannii* COUPER, 1953. Specimen GR425/8/33 A.
- Figure 3. *Pteruchipollenites thomasii* COUPER, 1958. Specimen GR426/3/21 A.
- Figure 4. *Neoraistrickia gristhorpensis* (COUPER, 1958), TRALAU, 1968. Specimen GR425/7/52 A.
- Figure 5. *Eucommiidites troedssonii* ERDTMAN, 1948. Specimen GR425/13/5 A.
- Figure 6. Cf. *Verrucosiporites obscurilaesuratus* POCOCC, 1962. Specimen GR425/6/56 A. Magnification Xc. 1250.