



PROFESSIONAL OPINION GEOL. 85.004

PALYNOLOGICAL REPORT ON SAMPLES FROM

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HOLZES QUARRY, OTWAY BASIN, VICTORIA  
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by

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The Holzlers Quarry mining the upper part of the Otway Group is located in the eastern Otway Basin (lat. 38°42'42" south, long. 143°45'42" east). Previous palynological work on drillhole samples from the western Otway Basin by Cookson (1954) and Dettmann (1963) had established an Early Cretaceous age for the Otway Group. Evans (1966) referred to early and middle Albian spore and pollen assemblages recovered by Dettmann from the lower Otway Group in FBH Ferguson Hill 1 well, and Douglas (1969) described an Albian macrofloral assemblage (his Zone D) from the 'Moonlight Head Beds' at Chapple Vale Fault.

Palynological examination of samples of clayey sandstone collected by Ms E.A. Felton (1985) confirmed a late Early Cretaceous age for (part of) the sequence exposed in the quarry. Four samples selected for laboratory analysis contained fair amounts of microscopic carbonised debris and cuticular fragments. Despite the degree of weathering of the sampled rocks two samples (numbers MFP8548 and MFP8549) yielded identifiable spores and pollen grains.

Sample MFP8548

This sample yielded a reasonably species-diverse assemblage, and the number of specimens recovered allows it to be dated with a fair degree of confidence. The following species have been identified in two microscope preparations:

SPORES:     Baculatisporites comaumensis (common)  
              \*Camarozonosporites clivus  
              Ceratosporites equalis  
              Ceratosporites sp.

Cicatricosisporites australiensis  
Cicatricosisporites fragments  
Crybelosporites striatus (1 specimen)  
Cyathidites australis  
Cyathidites minor  
Cyathidites punctatus  
Dictyotosporites speciosus  
Gleicheniidites circinidites  
Klukisporites scaberis (1 specimen)  
Leptolepidites verrucatus (1 specimen)  
Lycopodiumsporites austroclavatidites  
Lycopodiumsporites cf. L. nodosus  
Neoraistrickia truncata  
Osmundacidites wellmanii  
Pilosporites fragments  
 cf Reticulatisporites pudens (1 specimen)  
 cf Sestrosporites sp.  
Stereisporites antiquasporites (common)  
Stereisporites pocockii  
Velosporites triquetrus (1 specimen)

POLLEN GRAINS: Alisporites similis  
Alisporites fragments  
Araucariacites fissus  
 \*Classopollis simplex group  
Classopollis sp.  
Concentrisporites hallei  
 cf Inaperturopollenites turbatus  
Microcachryidites antarcticus  
Microcachryidites sp.  
Monosulcites minimus  
Podocarpidites ellipticus

ACRITARCHS: Micrhystridium sp. (1 specimen)  
Leiosphaeridia sp. (very rare)

This assemblage is of Albian and probably early Albian age. The presence of Crybelosporites striatus indicates a position in the fossil sequence not below the Crybelosporites striatus Subzone of the Dictyotosporites speciosus Zone of Dettmann & Playford (1969). The absence of various elements known from middle Albian fossil assemblages in the Otway and Great Artesian Basins (Coptospora paradoxa, representatives of the group of angiosperms), and the presence of Dictyotosporites speciosus also suggest that sample MFP8548 fits within the interval of the subzone.

The sparse presence of acritarchs and the absence of dinoflagellate cysts indicate non-marine environments of deposition for this part of the section.

Sample MFP8549

This sample yielded a moderate number of specimens, and the following species have been identified from examination of two microscope preparations:

SPORES:

- Baculatisporites comaumensis
- Cicatricosisporites australiensis
- Cicatricosisporites fragments
- Cyathidites australis
- Cyathidites minor
- Cyclosporites hughesii
- Dictyophyllidites crenatus
- Ischyosporites punctatus
- Gleicheniidites circinidites
- cf Lycopodiacidites dettmanniae
- Lycopodiumsporites austroclavatidites
- Lycopodiumsporites nodosus
- Lycopodiumsporites rosewoodensis
- Lycopodiumsporites spp.
- \*Neoraistrickia suratensis (1 specimen)

Neoralstrickia truncata  
Osmundacidites wellmanii  
Stereisporites antiquasporites  
Velosporites triquetrus

## POLLEN GRAINS:

Alisporites grandis  
Alisporites similis  
Classopollis sp.  
Concentrisporites hallei  
Microcachryidites antarcticus  
Podocarpidites ellipticus

## ACRITARCHS:

cf Nummus similis

The presence of Cyclosporites hughesii establishes the age of the fossils as Late Jurassic (probably not older than Tithonian) to Early Cretaceous (early Albian). According to Dettmann (see Dettmann & Douglas, 1976) the species disappears from the sequence before the Albian in the Otway Basin, but this may not be accurate, as in the Great Artesian Basin it is known from the Crybelosporites striatus Subzone and younger intervals. The lack of other Cretaceous key fossils prevents the sample to be dated more specifically. The absence of a group of spores which is typical of Late Jurassic and basal Cretaceous (Neocomian) microfloras of eastern Australia (Aequitriradites, Callialasporites, Contignisporites, Murospora) might indicate that the sample is younger than Neocomian, but recovery of fossils was not enough to put substantial weight on such an absence.

No dinoflagellates and spinose acritarchs were found, and this indicates nonmarine environments of deposition for the strata from which this sample was taken.

Both assemblages contain species (indicated with \*) which have been described from Upper Triassic and Lower Jurassic strata in the Clarence-Moreton and Surat Basins in southeastern Queensland (De Jersey, 1973; McKellar, 1974). These species have been observed

also in younger Jurassic strata in the Eromanga Basin but have been discarded as not in situ (i.e. recycled) elements (Burger, in prep.). Their occurrence in the Otway Group may indicate the presence of Jurassic strata in the Otway Basin, since removed by erosion.

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