

FLATHEAD-1

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Latrobe Group
Cores 3, 4 and 6 (1570', 1583', 1693'): Middle to Late Albian

All the above samples showed the same basic spore and pollen assemblage. Gymnospermous trisaccate and bisaccate pollen grains dominate the assemblage, e.g. *Podocarpidites ohikaensis*, *P.cf.ellipticus*, *Podosporites microsaccatus* (Core 4), and *Alisporites grandis* (Core 3). Common spores include the abundant *Cicatricosisporites australiensis*, *Cyathidites australis*, *Lycopodiumsporites austroclavatidites*, *L.nodosus* and *Aequitriradites spinulosus*. Spores found in core samples 3 and 4 but not in 6 include *Osmundacidites wellmanii*, *Foveotriletes cf.parviretus*, *Ceratospores equalis* and *Foraminisporis dailyi*. The latter species is not found later than Albian. In finer detail, each assemblage differs slightly. Only in core sample 3 are *Schizosporis reticulatus*, *Rouseisporites reticulatus*, *Pilosisporites cf.notensis* and *Foraminisporis asymmetricus* (Barremian-Albian) noted. In core sample 4, *Velosporites triquetrus* and *Leptolepidites major* are found. In core sample 6, the assemblage differs with the appearance of *Klukisporites scaberis*, *Pilosisporites parvispinosus* (Barremian-Albian), *Rouseisporites radiatus*, *Araucariacidites australis* and *Dictyotosporites cf.speciosus*. The latter species is used by Dettmann and Playford 1969 as a zone fossil. They give a stratigraphic range of Valanginian to Aptian. Morgan and others, however, extend this to the Early Albian. The occurrence of *D.cf.speciosus* with *Coptospora paradoxa* in core sample 6 would, on the Dettmann and Playford zonation scheme, give a precise age as Latest Aptian, i.e. earliest *Coptospora paradoxa* zone. The work of Burger, Morgan and others, however, suggests a Middle Albian to earliest Late Albian age. *Coptospora paradoxa* also occurs in core sample 3. This, together with the occurrence of *Crybelosporites striatus* in core samples 3, 4 and 6, places these assemblages in the *Coptospora paradoxa* zone.

Core 7: 3490' Early Albian

The spore and pollen assemblage resembles the Late Albian assemblages of core samples 3, 4 and 6 in containing common trisaccates and bisaccates. Spores, which are found in numbers, include *Cicatricosisporites australiensis*, the zone fossils *Crybelosporites striatus* and *Foraminisporis wonthaggiensis* (Valanginian to Albian). Other species noted include *Cyathidites australis*, *Foraminisporis dailyi*, *Pilosporites parvispinosus*, *Aequitriradites spinulosus*, *Osmundacidites wellmanii*, *Lycopodiumsporites austroclavatidites*, *Cicatricosisporites hughesi*, *Rouseisporites reticulatus*, *R. simplex* and *Araucariacidites australis*. The presence of *Dictyotosporites filiosus*, together with the absence of *Coptospora paradoxa*, indicates a Middle to Late Aptian age, according to the zonation of Dettmann and Playford 1969, or an Early Albian age after the zonation scheme by Burger, which is used in this report.

DISCUSSION

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The greater part of the Gippsland Basin lies off the coast of South East Victoria. Published information (Stover and Evans 1973) indicates that the basin is fault bounded to the north and south forming a graben structure. The basin has been folded by N.W. to S.E. compressional forces, producing a series of anticlinal folds, trending approximately N.E. to S.W. usually subparalleling the Victorian coastline.

Fig.1 shows the relative offshore positions of each well in this study. Fig.2, a cross section, attempts to correlate the ages of the Labrobe Group and Strzelecki Group in each well across the basin. The base of the Oligocene is used as the standard time horizon and, with the exception of Barracouta-1, this is the base of the Gurnard Formation (Oligocene). Only the age diagnostic species have been inserted on the cross section. Few time lines can be drawn with certainty, since only a few spot samples were provided for the study. Time lines in fig.2 are, therefore, tentative. Even so, the overall impression of basinal sedimentation is illustrated. Deposition seems to be greatest and apparently continuous in the Barracouta-1 area, with both condensed sequences and non-deposition occurring along the margins of the north and south platforms.

The unconformity shown on the Flathead-1 graphic log may represent a transgressive event. On palynological evidence, the hiatus is of brief duration and if present must be restricted to Early to Middle Albian times. Morgan 1980 and Burger 1980 record an Early to Middle Albian transgression in Australia, which had an effect on microfloral assemblages. Unfortunately, there is only a slight change in microfloral composition across the unconformity, and no marine indicators were found. In the assemblage above the unconformity, there was no palynological evidence for a Late Cretaceous or Early Tertiary age, thus reducing the possibility of the Albian microfloras being reworked assemblages.

In the graphic log of Perch-1 the samples are thought to be mislabelled. Their probable position has, therefore, been corrected in fig.2.

The interpretation of palaeoenvironments based upon spore and pollen content was not attempted in this report. Spores and pollen tend not to be as facies controlled as dinocysts and acritarchs, and may be found in several depositional environments. Dinocysts and acritarchs, with a few exceptions, tend to be confined to marine or brackish water conditions. Thus their presence in a microfloral assemblage indicates a marine influence in the depositional environment.

There are a number of Australian zonation schemes available for use in age dating studies in the Cretaceous and Tertiary. All the schemes used in this report use first and last appearance datums of particular spore and pollen species. The zonation scheme of Stover and Evans 1973 is used in this report for dating of the Campanian to Eocene whilst the Dettmann and Playford 1969 zonation scheme is used for the Cenomanian to Campanian. Burger 1973 and 1980 (in press) and Morgan and co-workers 1980 (in press) have revised the Lower Cretaceous part of the Dettmann and Playford scheme. The Burger and Morgan zonation schemes, used in this report, are approximately half a stage younger for Albian and Aptian stages. Morgan places the

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Coptospora paradoxa zone and the *Crybelosporites striatus* zone in the Late and Early Albian respectively. Burger shows a similar division but places the *C. paradoxa* zone in the Middle Albian. In contrast to these zonation schemes Dettmann and Playford 1969 place the *C. striatus* zone in the Late Aptian and the *C. paradoxa* zone in the Uppermost Aptian to early Late Albian.