SPORE-POLLEN ZONES IN THE OTWAY GROUP - PORT CAMPBELL EMBAYMENT

BY:

S J TICKELL

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INTRODUCTION

The Early Cretaceous Otway Group outcrops in the Otway Ranges and has been intersected in the subsurface by numerous boreholes to the west. It consists of two formations, the Eumeralla Formation which forms the main thickness of the group and the basal Pretty Hill Sandstone. Surface exposures and seismic surveys show that the rocks have suffered moderate faulting and folding. These structures have not been taken into account during this study due to a lack of information about them.

Spore-pollen zone determinations have been made by various workers for about twenty boreholes in this area. The biostratigraphic zones are shown in Figure 1.

In the Otway Ranges mega-flora zones have been determined from numerous localities by Dr J G Douglas. In the western Otway Ranges all the samples studied belong to zone D, which is equivalent to the P. pannosus, C. paradoxa and the upper part of the D. speciosus spore-pollen zones.

DISCUSSION

The distribution of the spore-pollen zones in some of the deeper boreholes is shown in Figure 2. The columns represent the Otway Group section in each hole and they have been drawn with the base of the Eumeralla Formation as a datum. The holes are arranged from east to west.

The P. pannosus and C. paradoxa zones and the D. filosus unit maintain relatively constant thicknesses while the underlying zones, particularly the C. striatus sub-zone tend to be more variable. This suggests the presence of an unconformity located near the boundary of the C. paradoxa and D. speciosus zones, a suggestion first proposed by Bain (1964). He noted that a dipmeter survey in Ferguson Hill 1 showed steeper dips in the lower section of the Otway Group. This change actually occurred in the lower part of the C. paradoxa zone and it also corresponded approximately

with a lithological change in the Eumeralla Formation, from a sandy upper section to a shaley lower section. To date no similar changes have been noted in other holes but the possibility of a regional unconformity at the same stratigraphic level should be investigated further.

Figure 3 depicts the distribution of the highest spore-pollen zones intersected in individual boreholes immediately below the overlying Late Cretaceous or Tertiary cover. It shows a progressive younging towards the southwest which suggests that the regional dip of the group is also in that direction. Subcrop of the basal Pretty Hill Sandstone could therefore be expected along the northern margin of the Otway Group's extent. At present this limit is only broadly defined by a few boreholes and in detail it is no doubt complicated by faulting.

CONCLUSIONS

i There is a possible regional unconformity at or slightly above the C. paradoxa/D. speciosus boundary.

ii The regional dip of the Otway Group is to the southwest.

iii The Pretty Hill Sandstone will be found at shallowest depths along the northern margin of the Otway Group's extent.

REFERENCES

Bain, J.S., 1964. Well completion report - Ferguson Hill No. 1, Southwest Victoria, Frome - Broken Hill Company Pty Ltd.

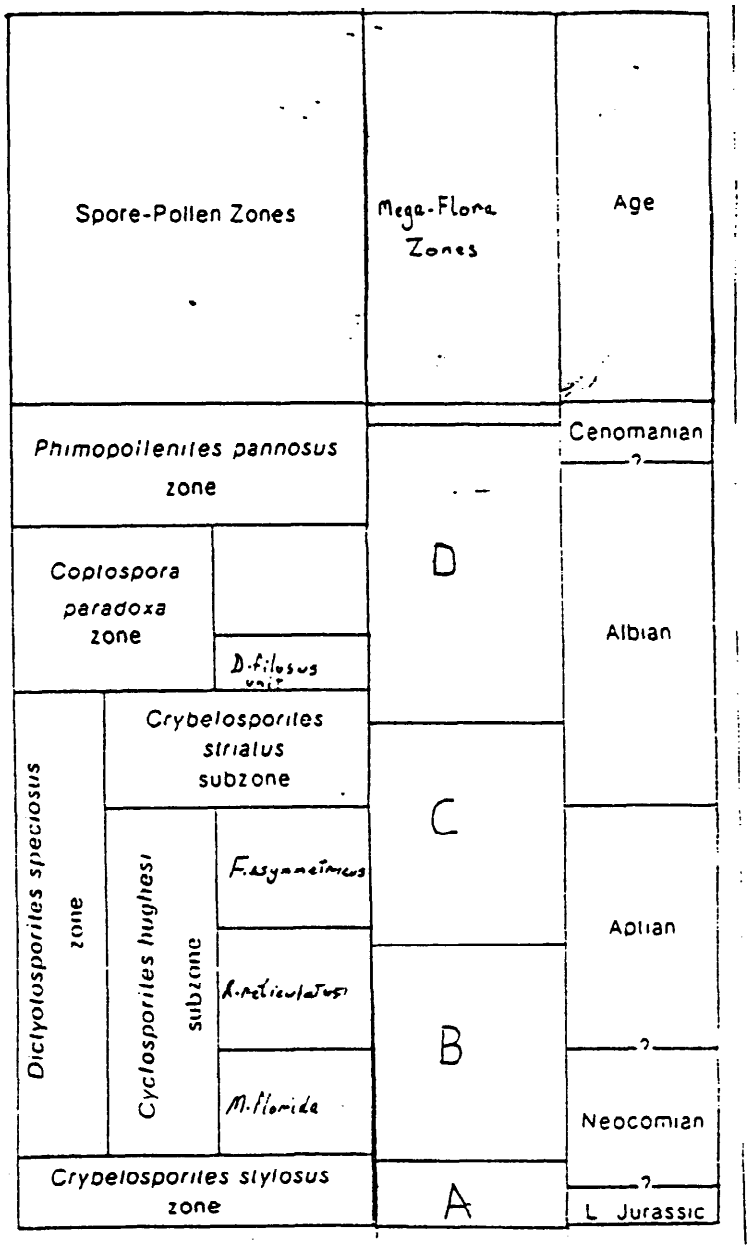

Fig 1 Spore-Pollen and Mega-Flora Zones (adapted from Douglas et al 1988)

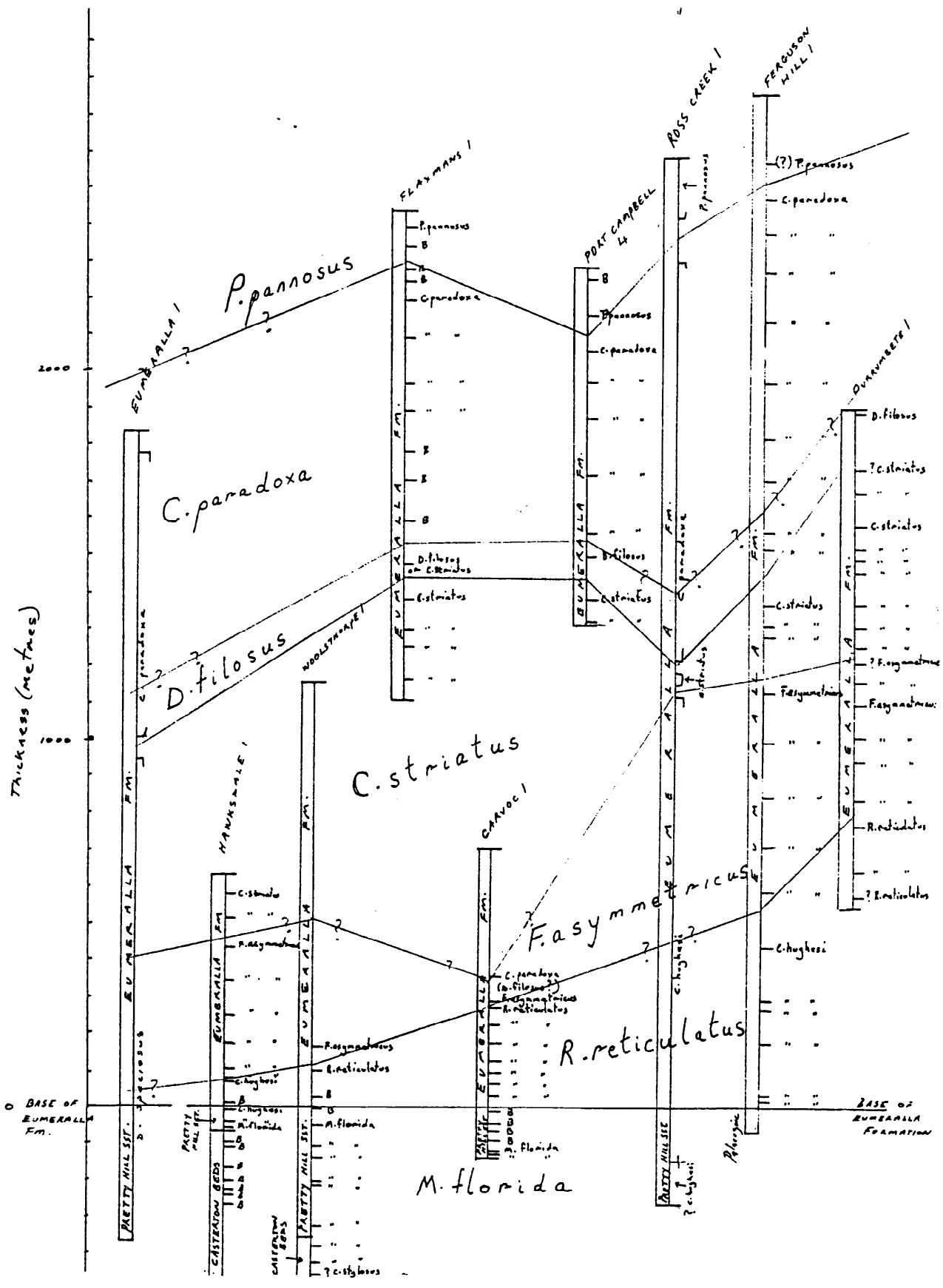

Fig 2. Correlation of spore-pollen zones in selected deep holes

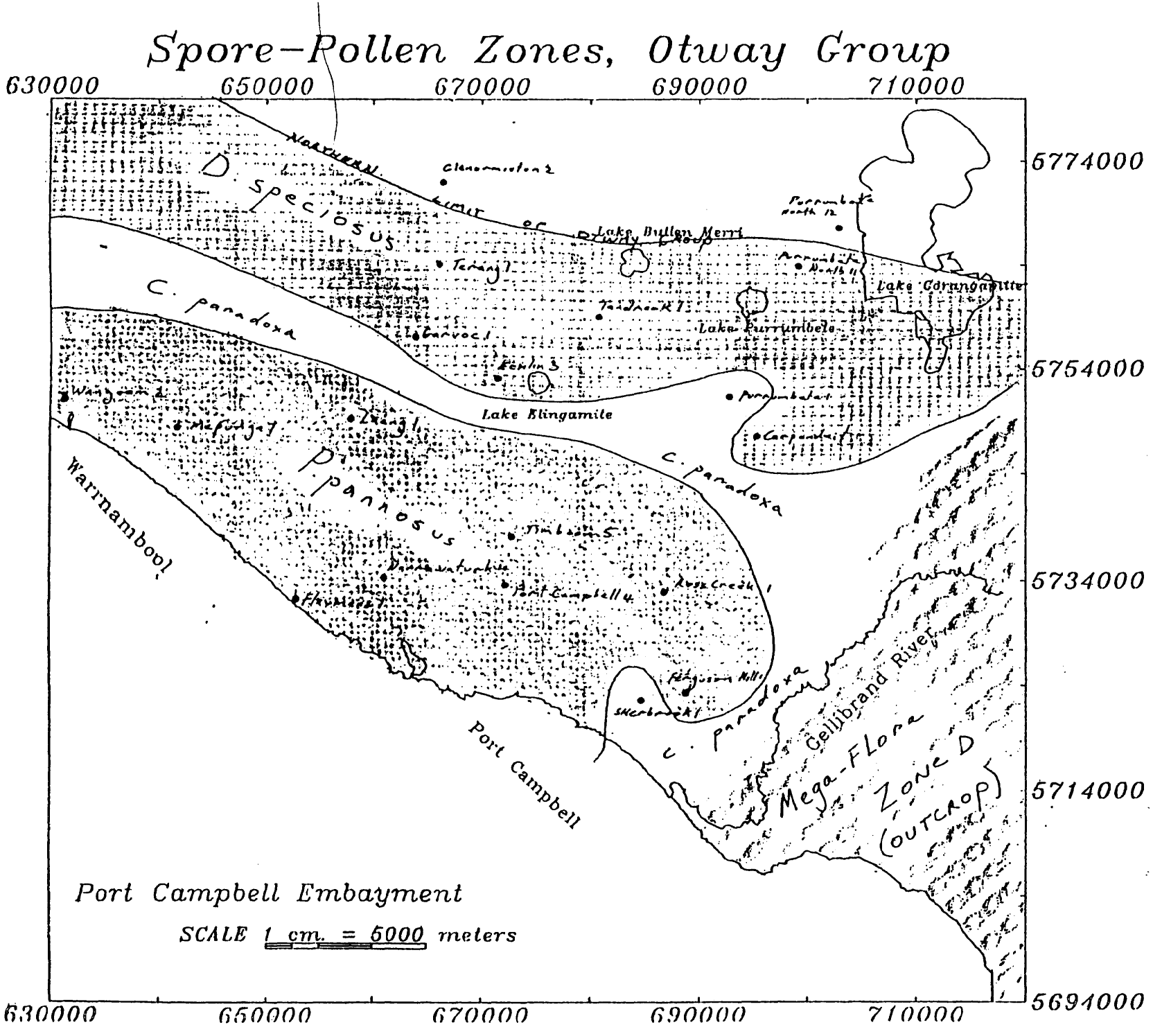

Fig. 3 Subcrop of the youngest spore-pollen zones beneath the cover of Late Cretaceous and Tertiary sediments