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PALYNOLOGY OF FOUR SAMPLES FROM THE

WENSLEYDALE COAL MINE AREA

ANGLESEA BASIN, VICTORIA

Geological Survey: Unpublished Report. 1992/28

BY

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for VICTORIAN GEOLOGICAL SURVEY

October 1992

REF: BRO.ANGLESEA

PALYNOLOGY OF FOUR SAMPLES FROM THE WENSLEYDALE COAL MINE AREA,

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I SUMMARY

A Wensleydale Coal Mine (Deans Marsh)

- mudstone sample and coal sample : both middle diversus Zone : Early Eocene : non-marine : usually seen near to top Eastern View Formation.
- red clay : sparse Pleistocene - Recent pollen may be soil contamination.

B Shelford Road Cutting

- sparse Pleistocene - Recent pollen may be soil contamination.

II INTRODUCTION

Jane Edwards, geologist with the Basin Studies group of the Victorian Geological Survey, submitted four rock samples for palynology. She required age dates for a mapping project in the area. The mudstone and coal from the Wensleydale Coal Mine were fresh and unweathered, and yielded well. The red clay from Wensleydale and a buff to light orange clay from the Shelford road cutting adjacent to the Yarrawee Fault, were deeply weathered and were not expected by me to yield an assemblage. In fact they yielded a sparse probably Modern assemblage.

Stratigraphic palynology of the Australian upper Tertiary has been rather scattered. The major work of Esso in the Gippsland Basin has concentrated on the oil bearing

Palaeogene while the Neogene has been studied at a lower level of interest. Key publications are those of Stover and Evans (1973) and Stover and Partridge (1973) but recent refinements and additions have been largely unpublished. Figure 1 illustrates the current zonal framework but backup documentation largely unpublished. Martin (1973) has studied Miocene to Pliocene sediments and emphasised the value of statistical variations of the dominant elements. This work has been incorporated into the unpublished synthesis represented by figure 1.

Grain counts of 100 specimens were carried out and the raw data are presented as Appendix 1.

### III PALYNOSTRATIGRAPHY

#### A Wensleydale Coal mine (Deans Marsh)

##### 1 Red Clay

This sample yielded only a very sparse assemblage of colourless pollen dominated by Pinus pollen with minor content of Acaciapollenites (wattle), Compositae (Tubulifloridae) (daisy), Graminiae (grass), Gleicheniidites (fern), Haloragacites haloragoides (herb) and Myrtaceidites eucalyptoides (gum tree). The taxa observed indicate a mid Miocene or younger age, but the absence of Nothofagidites infers a Pleistocene to Recent age. The dominance of Pinus pollen and extremely light spore colours suggest extensive Modern contamination and given the deeply weathered nature of the rock sample, Modern soil contamination seems most likely.

Non-marine environments are clearly indicated by the absence of marine indicators and the dominance and diversity of plant pollen.

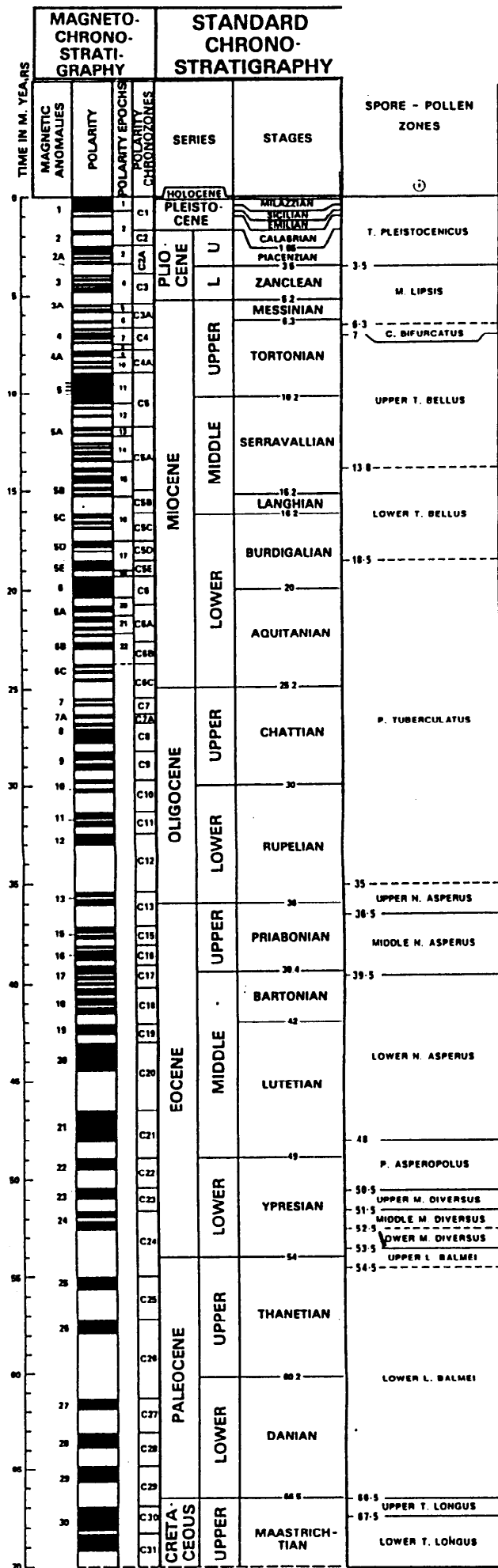


FIGURE 1 ZONAL FRAMEWORK

## 2 Mudstone

This sample yielded an excellent assemblage dominated by spores, pollen and small cuticle fragments. Assignment to the middle subzone of the Malvalcipollis diversus Zone of Early Eocene age is indicated by oldest Banksieaeidites arcuatus, B. elongatus, Beaupreadites verrucosus, Proteacidites ornatus and Triporopollenites ambiguus, without younger indicators. The most common taxon is Dilwynites granulatus, with Cyathidites, Proteacidites and Gleicheniidites circinidites frequent and Proteacidites grandis and P. incurvatus prominent.

This zone is normally seen near the top of the Eastern View Formation.

Non-marine environments are indicated by the abundant and diverse spores and pollen and absence of saline indicators. Freshwater algae (Botryococcus) are present, but minor, suggesting minor lacustrine influence.

## 3 Coal

This sample yielded an excellent assemblage dominated by inertinite with relatively minor spores and pollen. Assignment to the middle diversus Zone is indicated by oldest B. arcuatus, B. elongatus, B. verrucosus and T. ambiguus without younger indicators. Common taxa are the fern spores Clavifera triplex and G. cercinidites while D. granulatus is frequent. All other elements are rare to very rare, consistent with the coal lithology, usually the product of a lower diversity parent flora.

This zone is normally seen near the top of the Eastern View Formation.

Non-marine environments are indicated by the absence of saline indicators and the frequent and fairly diverse spores and pollen. Freshwater algae (Botryococcus) are minor and indicate only minor lacustrine influence.

## B Shelford Road Cutting

### 1 Red Clay

This sample yielded only a very sparse assemblage of colourless pollen dominated by Pinus pollen with frequent Graminae (grass) and rare elements including Compositae (Tubulifloridae) (daisy), Dictyophyllidites (fern), Myrtaceidites (gum tree) and other fern spores. These elements indicate that a mid Miocene to Recent age is definite but that Modern soil contamination is most likely. Older floras would be most unlikely to have been preserved given the weathered red clay lithology.

Non-marine environments are indicated by the absence of saline indicators and the presence of spores and pollen.

## IV CONCLUSIONS

The two fresh grey to black rock samples have yielded good assemblages indicating a horizon near the top of the Eastern View Formation. The coal sample contains a spore dominated assemblage consistent with a swamp environment. The shale sample is more diverse consistent with a swamp margin or floodplain environment.

The two deeply weathered rocks (red to orange clays) have yielded only sparse assemblages probably diverse from the Modern flora in the immediate vicinity.

V     REFERENCES

Martin HA (1973) Upper Tertiary palynology in southern New South Wales Spec. Publs. Geol. Soc. Aust 4 35-54

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WENSLEYDALE COAL MINE - SHELFORD ROAD CUTTING

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C L I E N T: VICTORIAN GEOLOGICAL SURVEY

W E L L: WENSLEYDALE COAL MINE - SHELFORD ROAD CUTTING








A N A L Y S T: ROGER MORGAN

D A T E : OCTOBER 1992

N O T E S: OUTCROP OR MINE SAMPLES

RANGE CHART OF GRAPHIC ABUNDANCES BY ALPHABETICAL ORDER

Key to Symbols

-  = Very Rare
-  = Rare
-  = Few
-  = Common
-  = Abundant
-  = Questionably Present
-  = Not Present



WENSLEYDALE  
 RED SAND  
 MUDSTONE  
 COAL  
 SHELFORD ROAD  
 ORANGE CLAY

1	ACACIAPOLLENITES	..
2	BANKSIEACIDITES ARCUATUS	..
3	BANKSIEACIDITES ELONGATUS	..
4	BEAUPREACIDITES VERRUCOSUS	..
5	CLAVIFERA TRIPLEX	..
6	COMPOSITAE (TUBULIFLORIDAE)	..
7	CYATHIDITES SP	..
8	DICTYOPHYLLIDITES	..
9	DILWYNITES GRANULATUS	..
10	DILWYNITES TUBERCULATUS	..
11	DIPORITES DELICATUS	..
12	ERICIPITES SCABRATUS	..
13	GEPHRAPOLLENITES SP	..
14	GEPHRAPOLLENITES WAHOEENSIS	..
15	GLEICHENIIDITES CIRCINIDITES	..
16	GLEICHENIIDITES SP	..
17	GRAMINIAE	..
18	HALORAGACIDITES HALORAGOIDES	..
19	HALORAGACIDITES HARRISII	..
20	LATROBOSPORITES AMPLUS	..
21	LYGISTEPOLLENITES FLORINII	..
22	MALVACIPOLLIS DIVERSUS	..
23	MALVACIPOLLIS SUBTILIS	..
24	MYRTACEIDITES ENCALYPTOIDES	..
25	MYRTACEIDITES SPATHULATA	..
26	NOTHOFAGUS BRACHYSPINULOSUS	..
27	NOTHOFAGUS EMARCIDUS/HETERUS	..
28	NOTHOFAGUS ENDURUS	..
29	NOTHOFAGUS FLEMINGII	..
30	PERIPOROPOLLENITES POLYORATUS	..
31	PEROMONOLITES VELLOUSUS	..
32	PHYLLOCLADIDITES MAWSONII	..
33	PINUS	..

34	PODOSPORITES MICROSACCATUS	WENSLEYDALE
35	PODOSPORITES SPP	RED SAND
36	PROLIXOSPHAERIDIUM PARVISPINUM	MUDSTONE
37	PROTEACIDITES	COAL
38	PROTEACIDITES ANNULARIS	SHELFORD ROAD
39	PROTEACIDITES GRANDIS	ORANGE CLAY
40	PROTEACIDITES INCURVATUS	
41	PROTEACIDITES ORNATUS	
42	PROTEACIDITES RETICULOCONCAVUS	
43	PROTEACIDITES SCABORATUS	
44	RETITRILETES AUSTRICLAVATIDITES	
45	STEREISPORITES (TRIPUNCTISPORIS) PUNIC	
46	STEREISPORITES ANTIQUISPORITES	
47	STEREISPORITES REGIUM	
48	TRICOLPORITES SP	
49	TRILETES TUBERCULIFORMIS	
50	TRIPOROPOLLENITES AMBIGUUS	
51	VERRUCATOSPORITES SP	
52	VERRUCOSISPORITES KOPUKUENSIS	

WENSLEYDALE  
RED SAND  
MUDSTONE  
COAL  
SHELFORD ROAD  
ORANGE CLAY