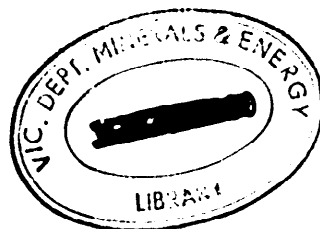




PALYNOLOGICAL EXAMINATION OF SAMPLES FROM ONSHORE
GIPPSLAND BASIN, SOUTHEASTERN VICTORIA, SUBMITTED
BY B THOMPSON

by V ARCHER

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Zonation follows the scheme established by Stover and Partridge 1973 and Partridge 1975. The samples were examined during 1979 at the request of B Thompson of the Victorian Geological Survey, except where otherwise indicated.

1 CARRAJUNG, SANDPITS YARRAM - WON WRON ROADS
AMG Coords: 468500 E : 5000000 N approx
Depth : Outcrop sample, S 1409
Lithology : Carbonaceous sand and gravel
Age : ? Triporobollenites bellus Zone (Early-Late Miocene)

Remarks : Species include Graminidites media, Milfordia homeopunctata, M. hypolaenoides, Myrtacidites eucalyptoides, Polyadipollenites myriosporites, Polyporina chenopodiaceoides, Tubulifloridites antipodica and T. pleistocenicus.

Zone determination is based on the absence of species characterizing the overlying zone, but since the microfloral yield was low, the zone given (T. bellus Zone) should be regarded as a lower limit only.

2 DENISON 54 AMG COORDINATES 489192 E, 5791405 N

Depth (m)	Slide No	Lithology	Age
a) 105 - 108.1	S1163	Grey sandy clay	<u>Proteacidites tuberculatus</u> Zone (early Oligocene-early Miocene)
b) 152.6 - 155	S1164	Woody sandstone	" "
c) 200 - 202	S1167	Siltstone	" "
d) 247 - 249	S1168	Carbonaceous sandstone	" "
e) 295 - 296	S1165	Dark sandy siltstone	" "
f) 430 - 433	S1171	Dark sandy clay	Middle-Upper <u>Nothofagidites asperus</u> Zones (Late Eocene-early Oligocene)

g) 470 - 480	S1172	Light sandy clay	Middle-Upper <u>Nothofagidites asperus</u> Zones (Late Eocene-early Oligocene)
h) 524 - 530	S1173	Woody sandstone	" "
i) 558 - 559	S1174	Dark mudstone	Indeterminate

Remarks: Samples a) - e) contain Cyatheacidites annulatus, Cyathidites subtilis, Proteacidites tuberculatus and Foveotrilletes crater.

Sample f) contains mainly longranging species but the presence of Tricolporites sphaerica and Pedocarpidites nanus indicates a lower age of the Middle N. asperus Zone.

Samples e) and f) contain rare dinoflagellates (Hystrichosphaeridium sp.)

Sample h) contains Verrucosisporites cristatus which ranges from the Middle N. asperus Zone.

Sample i) yielded sparse microflora.

3 GORMONDALE-YARRAM ROADS
 AMG Coords: 478500 E : 5751500 N
 Outcrop sample, S1400
 Lith: Brown clay
 Age : ? T. bellus Zone

Remarks: Pollen is poorly preserved and sparse, but the presence of Haloragacidites haloragoides indicates that the sample has a lower limit of the T. bellus Zone.

4 HAZELWOOD 1321		Examined for G Holdgate of the SEC	
AMG Co-ords: 450388.8 E : 5765011.4 N			
Depth (m)	Slide No	Lithology	Age
a) 348	S1493	Carbonaceous mudstone	<u>P. tuberculatus</u> Zone
b) 484.3	S1494	" "	" "
c) 559	S1496	" "	Middle <u>N. asperus</u> Zone (late Eocene)
d) 619	S1495	Coal	Lower-Middle <u>N. asperus</u> Zones (Middle-late Eocene)

Remarks: Samples a) and b) contain species characteristic of the P. tuberculatus Zone: Cyatheacidites annulatus, Foveotriletes crater and Proteacidites tuberculatus.

Sample c) Species include Triorites magnificus; a characteristic species of the Middle N. asperus Zone.

Sample d) contains mainly longranging species which allow a lower limit of the Lower N. asperus Zone to be given.

5 HOLEY PLAINS 185 AMG COORDINATES 496031.5 E, 5775400.4 N
Examined for M Reid and B R Thompson of the
Geological Survey

Depth (m)	Slide No	Lithology	Age
a) 30 - 35	S1373	Brown coal with sand	? Upper <u>T. bellus</u> Zone
b) 95 - 97.7	S1374	" "	" "
c) 127 - 130.6	S1375	Fine Carbonaceous sandstone	? <u>T. bellus</u> Zone
d) 158.8 - 163.7	S1376	Brown coal	Indeterminate
e) 1106 - 1111	S1381	Clay and coal	Middle <u>N. asperus</u> Zone

Remarks: Samples a) and b). Species include Milfordia hypolaenoides (common), M. homeopunctata, Haloragacidites harrisii (common), Nothofagidites spp. (common), Myrtaceidites eucalyptoides, Symplocoidipollenites austellus and Monosulcites waitakiensis (frequent sample b)).

Zone determination is based on the absence of species characterizing the overlying Zones.

Sample c) yielded sparse microflora, which contains Rugulatisporites micravilax which ranges from the T. bellus Zone.

Sample d) contains a low species diversity with species indicating only that the sample has a lower limit of the lower M. asperus Zone.

Sample e) contains Triorites magnificus.

6 HOLEY PLAINS 192 ANG COORDINATES 493748.2, 5776023.4

Depth (m)	Slide No	Lithology	Age
a) 39 - 42	S1491	Weathered sandstone	Indeterminate
b) 66 - 69	S1492	Brown coal	<u>T. bellus</u> Zone

Remarks: Sample a) yielded sparse microflora.

Sample b) contains a low species diversity with Milfordia hypolaenoides being the predominant species.

7 MARYVALE 2390 AMG COORDINATES 452082.2 E, 5771161.8 N
 Samples were examined for B Thompson and M Reid

Depth (m)	Slide No	Lithology	Age
a) 147.5 - 155	S1404	Brown coal	<u>T. bellus</u> Zone
b) 231.8 - 238.4	S1571	" "	? <u>P. tuberculatus</u> Zone
c) 304 - 310	S1411	Ligneous clay	<u>P. tuberculatus</u> Zone
d) 415.1 - 420.4	S1572	Brown coal	" "
e) 472 - 476	S1402	Ligneous clay	" "
f) 552.6 - 556.4	S1573	" "	" "
g) 642 - 646	S1410	" "	Middle <u>N. asperus</u> Zone
h) 669.07- 702	S1379	Grey mudstone	Barren
i) 733.54-736.36	S1380	" "	"

Remarks: Sample a). Species include Symplocoipollenites austellus and Tubulifloridites pleistocenicus which range from the T. bellus Zone.

Sample b). This sample contains a low species diversity with a predominance of Haloragacidites harrisii and Nothofagidites spp. and species diagnostic of the P. tuberculatus and T. bellus Zones are not represented.

Samples c) and f) contain species indicative of the P. tuberculatus Zone: Cyatheacidites annulatus, Cyathidites subtilus, Foveo-~~letes~~ crater and Proteacidites tuberculatus.

Samples d) and e). No diagnostic species were observed in these samples except for the presence of P. tuberculatus in sample e).

Sample g) contains Triorites magnificus.

8 LOY YANG 1675 AMG COORDINATES 468361.9 E, 5774242.7 N

Depth (m)	Slide No	Lithology	Age
a) 145.86-151.81	S1469	Fawn clay and gravel	<u>P. tuberculatus</u> Zone
b) 323 -326.2	S1470	Brown coal	Upper <u>N. asperus</u> Zone
c) 753 - 754	S1471	Woody mudstone	Lower-Middle <u>N. asperus</u> Zones

Remarks: Sample a) contains frequent Cyatheacidites annulatus.

Sample b). This sample contains Proteacidites tuberculatus, which ranges from the Upper N. asperus Zone, but lacks species characteristic of the overlying P. tuberculatus Zone.

Sample c). The presence of Santalumidites cainozoicus which ranges to the Middle N. asperus Zone, and species which range from the Lower N. asperus Zone: Periporopollenites vesicus, Mantonisporites ornamentalis, Podocarpoidites ostentatus and Gothanipollis bassensis, indicate the upper and lower limits of the sample.

9 LOY YANG, OPEN CUT IN MORWELL 2 SEAM

Co-ords: 461400E: 5767100N

Outcrop sample, S1468

Lith: Brown coal

Age : Upper N. asperus Zone

Remarks: Sample contains a low species diversity which includes Proteacidites tuberculatus and frequent P. stipplatus.

10 MORWELL OPEN CUT

a) M1A/M1B Split, 4 level, N.E. Corner, Morwell Open cut.

Co-ords: 447760E : 5766137N

Depth: + 11 m, S1461

Lith: Carbonaceous clay

Age: P. tuberculatus Zone

b) MO/MA Sediments, 1 level, N.W. Corner, Morwell Open Cut

Co-ords: 445363E : 5766880N

Depth: + 27 m, S1462

Lith: Carbonaceous clay

Age: P. tuberculatus Zone

c) Yallourn/Morwell Interseam, 1A level, N.W. corner, Morwell Open Cut

Co-ords: 445313E : 5766910N

Depth: + 40 m, S1463

Lith: Carbonaceous clay

Age: P. tuberculatus Zone

d) Base MI Interseam, 8 level, Morwell Open Cut

Co-ords: 446476E : 5765663N

Depth: - 36 m, S1464

Lith: Carbonaceous clay

Age: P. tuberculatus Zone

e) Morwell Overburden, leaf strata, 1 level, N.E. Corner, Morwell Open Cut

Co-ords: 447901E : 5766088N

Depth: + 67 m, S1460

Lith: Carbonaceous clay

Age: Meyeripollis lipsis Zone (Pliocene)

Remarks: Samples a) - d) contain Cyathidites subtilis, Cyatheacidites annulatus (not noted in sample d)), Foveotriletes crater and F. palaequetrus (noted in sample d) - ranges to the top of the P. tuberculatus Zone).

Sample e) - Zone determination is based on the high proportion of Tubulifloridites pleistocenicus, which first becomes common in the M. lipsis Zone (A Partridge - pers. comm.). Other species include Cingulatisporites bifurcatus, Cyperaceae sp., Dodonea sphaerica and Haloragacidites amolus.

11 YALLOURN SEAM Yallourn Open Cut Level 2
 AMG Coords: 443000 E : 5771000 N
 Outcrop sample, S1467
 Lith: Brown Coal
 Age: ? Upper N. asperus Zone

Remarks: Species diversity is low, but the consistent occurrence of Proteacidites tuberculatus and the abundance of Phyllocladidites mawsonii (80%) indicate that the sample may occur within the Upper N. asperus Zone.

12 ROSEDALE 301 AMG COORDINATES 485562.5 E, 5776759.5 N

	Depth (m)	Slide No	Lithology	Age
a)	81.5 - 87.2	S1498	Sandy mudstone	<u>T. bellus</u> Zone
b)	186 - 187	S1499	Dark siltstone	? <u>P. tuberculatus</u> Zone
c)	420 - 426	S1500	Grey sandstone	Barren
d)	654 - 660.2	S1501	Weathered carb. sandstone	<u>P. tuberculatus</u> Zone
e)	835 - 836	S1503	" " "	Middle <u>N. asperus</u> Zone

Remarks: Sample a) contains Haloragacidites haloragoides which ranges from the T. bellus Zone.

Sample b). Species diversity is low with an abundance of Haloragacidites harrisii and Ncthofagidites spp. and lacks diagnostic species.

Sample d) contains species diagnostic of the P. tuberculatus Zone, Cyatheacidites annulatus and Foveotriletes crater.

Sample e) contains Triorites magnificus.

13 ROSEDALE 307 AMG COORDINATES 476120.9E, 577518.8N

Depth (m)	Slide No	Lithology	Age
a) 427.9	S1532	Brown coal	? Upper <u>N. asperus</u> Zone
b) 49 - 501	S1533	"	"
c) 618 - 624	S1534	"	Middle <u>N. asperus</u> Zone

Remarks: Samples a) - c). Species diversity for all samples is low, but the presence of Triorites magnificus in sample c) indicates the Middle N. asperus Zone and the age of the two higher samples is based on absences of species diagnostic of the overlying and underlying zones.

14 TOONGABBIE SOUTH 31 AMG COORDINATES 467631.3E, 5780767.4N

Depth (m)	Slide No	Lithology	Age
a) 123	S1176	Brown clay	<u>P. tuberculatus</u> Zone
b) 214 - 215	S1177	Brown claystone	? Upper <u>N. asperus</u> Zone
c) 628	S1179	Woody claystone	Indeterminate
d) 639	S1180	" "	"

Remarks: Sample a) contains Foveotriletes lacunosus which ranges from the middle of the P. tuberculatus Zone, and lacks species characteristic of the overlying T. bellus Zone.

Sample b) yielded a low species diversity of mainly longranging species with a predominance of Haloragacidites harrisii and lacked any diagnostic species.

Samples c) and d) yielded sparse microflora.

15 TRARALCON 286 AMG COORDINATES 459697.3E, 5772926.9N

Depth (m)	Slide No	Lithology	Age
a) 256.7 - 259.2	S1575	Brown coal	Indeterminate
b) 404.7 - 410.7	S1576	" "	"
c) 623.23- 628.8	S1577	Sandy clay	Lower <u>N. asperus</u> - <u>P. tuberculatus</u> Zones

Remarks: Samples a) and b) - species diversity is low with a predominance of Haloragacidites harrisii and no diagnostic species are represented in the assemblages.

Sample c) yielded sparse microflora, with Nothofagidites spp. predominating. The other species present are longranging and include Proteacidites reticulo-scabratus and Periporopollenites vesicus which range from the Lower N. asperus Zone to the P. tuberculatus Zone.

16 PARISEI WON WRON Examined for G Walker & B R Thompson of the Geological Survey

AMG Co-ords: 472200 E : 5740600 N

Depth: 258 m, S1550

Lith: Sandy clay and silt

Age: Upper N. asperus Zone

Remarks: Zone determination is based on the presence of Proteacidites tuberculatus and the absence of species diagnostic of the overlying P. tuberculatus Zone.

17 WOUNDELLAH 10 AMG COORDINATES 496492.9E, 5782920.2 N

Depth (m)	Slide No	Lithology	Age
a) 219 - 225	S1558	Carbonaceous sandstone	Indeterminate
b) 299 - 300	S1559	Fine sandstone	"
c) 457 - 462	S1560	Carb. sandstone	"
d) 551 - 552	S1561	Fine sandstone	"
e) 646.9 - 649	S1156	Coal	? Upper <u>N. asperus</u> Zone
f) 650 - 652	S1157	"	"
g) 694 - 697	S1158	Ligneous clay	Middle <u>N. asperus</u> Zone
h) 749	S1159	Grey, woody siltstone	Indeterminate
i) 754 - 755	S1160	" "	"
j) 755 - 756	S1161	" "	<u>Malvacipollis diversus</u> Zone - Lower <u>N. asperus</u> Zone (Early - Middle Eocene)

Remarks: Samples a) - d). Microflora is poorly preserved and sparse, but the presence of Cyatheacidites annulatus in sample a) possibly indicates the P. tuberculatus Zone.

Samples e) and f). The presence of Proteacidites tuberculatus places a lower limit of the Upper N. asperus Zone on sample e), but other than this, no diagnostic species are represented.

Sample g) contains Anacolosidites sectus which is characteristic of the Middle N. asperus Zone.

Samples h) - j) yielded sparse microflora consisting largely of reworked Cretaceous species and long-ranging Tertiary species. The presence of Proteacidites reticulatus in sample j) indicates the Malvacipollis diversus Zone to the Lower N. asperus Zone.

References:

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