

✓ PALYNOLOGICAL REPORT ON WANGOOM NO. 2 AND NO. 6 BORES

Core samples submitted by Frome-Broken Hill Co. Pty. Ltd. from Wangoom No. 2 and No. 6 bores provided microfloras of Lower and Upper Cretaceous ages. The microfloras referable to the Paradoxa Assemblage of Dettmann (1963) and Assemblage II and III of Dettmann (1964a) are considered in this report and have been obtained from between 3016 and 3972 ft. in Wangoom No. 2 bore and from between 3126 and 3415 ft. in Wangoom No. 6 bore. On microfloral evidence it is demonstrated that these sediments range in age from Albian to Senonian. Succeeding horizons (No. 2 bore, 2834-39 ft., No. 6 bore 2974-3126 ft.) contain spores, pollen and microplankton that comprise assemblages considered to be of younger (Senonian or later) aspect.

MICROFLORAL ASSEMBLAGES AND CORRELATIONS

1. The lowest horizons examined (No. 2 bore 4224-26 ft., No. 6 bore 3715-19 ft.) either are barren or contain extremely sparse microfloras in which no stratigraphically significant species were observed.
2. The sample from 3968-72 ft. in No. 2 bore contains a well-preserved microflora which includes the diagnostic species, Coptospora paradoxa (Cookson & Dettmann), of the Paradoxa Assemblage and lacks both angiosperm grains and microplankton. The presence of Kraeuselisporites majus (Cookson & Dettmann) and Laevigatosporites ovatus Wilson & Webster together with C. paradoxa indicates an Albian age and suggests correlation with at least part of the sequence between 3105 and 6423 ft. in Fergusons Hill No. 1 well and equivalents of this sequence (see Dettmann, 1964d).

The well-preserved but restricted assemblages extracted from No. 6 bore between 3314-3415 ft. lack C. paradoxa but are probably referable to the Paradoxa Assemblage. This assignment is based upon the absence of angiosperm grains and the abundance of certain spore species (Aequitriradites spinulosus (Cookson & Dettmann), Foraminisporis asymmetricus (Cookson & Dettmann)) which are either absent from or rare components in Assemblage II. However, the evidence is insufficiently conclusive to exclude the possibility that the microfloras are variants of Assemblage II. The presence of Kraeuselisporites majus and Laevigatosporites ovatus in the stratigraphically lower sample demonstrates an age no older than the Albian.

3. Coptospora paradoxa occurs in association with angiosperm grains (Tricolpites sp.) in No. 2 bore at 3439-43 ft. The combined presence of these species indicates correlation with Timboon No. 5 bore at 3500-04 ft. and Eumeralla No. 1 well at 3311-21 ft. (see Dettmann, 1964c).

4. Assemblage II of Upper Albian-Cenomanian/Turonian age has been recognised only in No. 2 bore between 3347-49 ft. The microflora in this sample includes several species (Trilobosporites trioreticulosus Cookson & Dettmann, Balmeisporites holodictyus Cookson & Dettmann, etc.) known also from the Paradoxa Assemblage together with Amosopollis cruciformis Cookson & Balme, and angiosperm grains. Microplankton have not been observed in residues of this or succeeding samples (3136-3245 ft.) which contain extremely sparse spores and pollen grains of no diagnostic value. On the basis of Assemblage II, horizons between 3347-49 ft. in Wangoom

No. 2 bore are correlated with those in Timboon No. 5 bore between 3407-10 feet. Other sediments containing equivalent microfloras have been reported from sequences in the Port Campbell, Flaxmans, Sherbrook, and Fergusons Hill wells (see Dettmann, 1964a, b, d).

Assemblage II was not recognised in Wangoom No. 6 bore.

5. Assemblage III, characterised by cf. Gleicheniidites sp., first occurs at 3252-56 ft. in Wangoom No. 6 bore. Associated plankton species include Odontochitina striatoperforata Cookson & Eisenack, Hexagonifera vermiculata Cookson & Eisenack, and Deflandrea cretacea Cookson. Comparable spore and plankton suites of Turonian-Senonian age occur in Port Campbell No. 1 well at 5223-33 ft. and Port Campbell No. 3 well at 4400-10 ft. Microfloras assignable to Assemblage III occur at higher levels (3126-94 ft.) in No. 6 bore. The microplankton content of these horizons is low and includes Odontochitina striatoperforata and Deflandrea cretacea. Douglas (1961, p.11) reports Nelsoniella aceras Cookson & Eisenack from (?) 3126 ft. in No. 6 bore and this deposit may thus be an approximate equivalent of sediments between 2949-63 ft. in Timboon No. 5 bore (see Dettmann 1964c). Nelsoniella aceras was also recovered from Wangoom No. 2 bore between 3016-35 ft. in association with Odontochitina porifera Cookson, Hexagonifera vermiculata, and cf. Gleicheniidites sp. According to the evidence presented by Cookson (1956), Cookson and Eisenack (1960) and Douglas (1961) Nelsoniella aceras first appears in western Victorian Cretaceous sediments at a stratigraphically higher level than the first appearance of Deflandrea cretacea, although Douglas (1961) notes that the ranges of the two species overlaps. Following Douglas' criteria, the Wangoom and Timboon horizons from which the present writer has obtained Nelsoniella aceras are equivalents of his 'Zone 2'. This zone was recognised by Douglas in Port Campbell No. 1 well between 3977-4866 ft.; these deposits are higher in the Cretaceous sequence than those reported on by the present writer (1964a).

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WANGOOM No. 2		WANGOOM No. 6						
2834-39				Indet	Paradoxa	II	Indet	III
c.AL	3016-35 ft.							+
.AM	3138-53 ft.							
c.AN	3225-45 ft.	+						
c.AO	3347-49 ft.	+	+					
c.AP	3439-43 ft.	+	+					
c.AQ	3670-72 ft.	+	+					
c.AR	3968-72 ft.	+	+					
c.AS	4224-26 ft.							
c.AV	3126-51 ft.	+	+					+
c.AW	3191-94 ft.	+	+					
c.AX	3252-56 ft.	+	+					
c.AY	3514-21 ft.	+	+					
c.AZ	3411-15 ft.	+	+					
c.BA	3715-17 ft.							
c.BB	3717-19 ft.							
1.	<i>Cicatricosporites australiensis</i>							
2.	<i>Aequitriaradites spinulosus</i>							
3.	<i>Rouseisporites reticulatus</i>							
4.	<i>Foraminisporis wonthaggiensis</i>							
5.	<i>Foraminisporis asymmetricus</i>							
6.	<i>Crybelosporites striatus</i>							
7.	<i>Rouseisporites radiatus</i>							
8.	<i>Coptospora paradoxa</i>							
9.	<i>Trilobosporites trioreticulosus</i>							
10.	<i>Trilites</i> cf. <i>T. tuberculiformis</i>							
11.	<i>Kraeuselisporites majus</i>							
12.	<i>Cicatricosporites hughesi</i>							
13.	<i>Laevigatosporites ovatus</i>							
14.	<i>Kraeuselisporites</i> sp. A							
15.	cf. <i>Gleicheniidites</i> sp.							
16.	<i>Balmeisporites holodictyus</i>							
17.	<i>Balmeisporites tridictyus</i>							
18.	<i>Amosopollis cruciformis</i>							
19.	<i>Tricolpites</i> sp.							
20.	<i>triporate</i> sp. A							
21.	<i>triporate</i> sp. B							
22.	<i>Deflandrea triaratha</i> (McIntosh)							
23.	<i>Hystriosphæridium heteracanthum</i>							
24.	<i>Odontochitina striatoperforata</i>							
25.	<i>Odontochitina porifera</i>							
26.	<i>Deflandrea cretacea</i>							
27.	<i>Hexagonifera vermiculata</i>							
27.	<i>Nelsoniella aceris</i>							
28.	<i>Amphidilema dentriculata</i>							

Table 1. Distribution of selected spore, pollen, and microplankton species in Cretaceous core samples from Wangoom No.2 and No.6 bores.

+ - species present; \*-record of Douglas (1961).