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PALYNOLOGICAL REPORT ON CORE SAMPLES FROM TIMBOON No.5 BORE

Core samples submitted by Frome-Broken Hill Co. Pty. Ltd. from Timboon No.5 bore yielded microfloral assemblages of Cretaceous and Tertiary ages. The Lower and Upper Cretaceous (Aptian/Albian to Turonian/Senonian) microfloras that are detailed below and documented in Table 1 occur in samples between 3163 and 3691 feet. Horizons succeeding this interval contain younger assemblages (Senonian and later) which will be considered in a later report.

MICROFLORAL ASSEMBLAGES AND CORRELATIONS

1. Cores retrieved from between 3680-91 ft. and 3562-69 ft. contain impoverished microfloras that include Coptospora paradoxa (Cookson & Dettmann), the diagnostic species of the Aptian-Albian Paradoxa Assemblage of Dettmann (1963a). Microplankton referable to Hystrichosphaeridium are extremely rare in both samples, and the stratigraphically higher sample also yielded a single specimen here compared with the Aptian-Albian plankton species Spinidinium styloniferum Cookson & Eisenack. The presence of the Paradoxa Assemblage in the Timboon samples indicates their correlation with at least part of the sequence between 7473 and 9135 ft. in Flaxmans No.1 Well and with equivalents previously documented by Dettmann (1963a,b,c; 1964a,b) of the latter sequence.

2. A diverse assemblage composed of well-preserved spores and pollen and apparently lacking microplankton occurs in the sample from 3500-04 ft. Constituent species include Coptospora paradoxa, Kraeuselisporites majus

(Cookson & Dettmann), Kraeuselisporites sp.A, Trilobosporites trioreticulosus Cookson & Dettmann, Balmeisporites holodictyus Cookson & Dettmann, Pyrobolospora reticulata Cookson & Dettmann, and Tricolpites sp. This assemblage includes diagnostic components of both the Paradoxa Assemblage and Assemblage II of Dettmann(1964a) and is comparable to that obtained from Eumeralla No.1 Well between 3511-21 ft. (see Dettmann 1963b).

3. Fair concentrations of spores, pollen, and microplankton are represented in the sample from between 3407-10 ft. Spores and pollen include Kraeuselisporites spA, Appendicisporites spA, Amosopollis cruciformis Cookson & Balme, and Tricolpites sp., whilst microplankton comprise Gonyaulax edwardsi Cookson & Eisenack and Odontochitina operculata Deflandre. Such an association is conformable with Assemblage II that has been reported previously from the following horizons: Port Campbell No.1 Well between 5700 and 5934 ft., Port Campbell No.2 Well between 8096 and 8624 ft., Port Campbell No.3 Well between 4781and 4801 ft., and Flaxmans No.1 Well between 6882 and 7220 ft. (see Dettmann 1964a,b). The suggested age of these horizons is Upper Albian-Cenomanian/Turonian.

It should be noted that Douglas (1961, p.7; pl.2, fig.11a,b) records and illustrates a doubtful specimen of Deflandrea cretacea Cookson from Timboon No.5 bore at 3407-10 ft. The occurrence of D. cretacea (which hitherto has been found by the writer only in horizons containing Assemblage III) would indicate a younger (Turonian/Senonian) age, but no members of Deflandrea have been recovered in the present investigation from this level in Timboon No.5 bore.

4. Samples from between 3163 and 3297 ft. yielded fair concentrations of spores and pollen and rare microplankton. The presence of cf. Gleicheniidites sp. indicates that Assemblage III of Dettmann (1964a) is represented in these horizons. Pollen forms present include Tricolpites sp. and triporate angiospermous grains. The microplankton species Hystrichosphaeridium heteracanthum Deflandre & Cookson and poorly preserved representatives of Deflandrea (D. ?cretacea) occur in both samples, whilst Odontochitina sp. (O. ?cribropoda) was observed in the stratigraphically lower sample. The presence and first appearance of Assemblage III in Timboon No.5 bore between 3163 and 3297 ft. indicates correlation of these horizons with the following strata: Port Campbell No.1 Well at 5223-33 ft., Port Campbell No.2 Well between 7403 and 7913 ft., Port Campbell No.3 Well between 4400 and 4695 ft., Flaxmans No.1 Well between 5950 and 6872 ft., and Pretty Hill No.1 Well at 2928-40 ft. The doubtful specific identity of representatives of Deflandrea and Odontochitina precludes more refined correlations.

5. The succeeding core sample (3072-3077 ft.) contains a microflora almost entirely composed of Hystrichosphaeridium heteracanthum and angiosperm grains, whilst the sample from 2949-2963 ft. marks the first appearance of Nelsoniella aceras Cookson & Eisenack. The presence of N. aceras indicates that the upper horizon is younger than the Port Campbell and Flaxmans sediments reported on previously (Dettmann 1964a,b).

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Timboon.

	Microspores														Mega-spores			Pollen			Micro-plankton					
	Aequitriradites spinulosus	Cicatricosisporites australiensis	Rouseisporites reticulatus	Foraminisporis asymmetricus	Rouseisporites simplex	Crybelosporites striatus	Coptospora paradoxa	Kraeuselisporites majus	Trilobosporites trioreticulosus	Cicatricosisporites hughesi	Laevigatosporites ovatus	Microfoveolatosporis canaliculatus	Kraeuselisporites sp.A	Appendicisporites sp.A	cf. Gleicheniidites sp.	Balmeisporites holodictyus	Balmeisporites tridictyus	Pyrobolospora reticulata	Amosopollis cruciformis	Tricolpites sp.	triporate sp.A	triporate sp.B	Spinidinium styloniferum	Gonyaulax edwardsi	Odontochitina operculata	Hystrichosphaeridium heteracanthum	Odontochitina cribropoda	Deflandrea cretacea
c.AY 3163-73 ft.			+								+				+					+	+	+				+	?	?
c.AZ 3286-97 ft.			+								+				+				cf	+	+	+				+	?	?
c.BA 3407-10 ft.			+								+		+	+					+	+				+	+			
c.BB 3500-04 ft.	+	+	+		+	+	+	+	+	+	+		+			+	+	+		+								
c.BC 3562-69 ft.						+	+																cf					
c.BD 3680-91 ft.				+			+																					

Assemblage		
	II	III
Paradoxa		

Table 1. Distribution of selcted spore, pollen, and microplankton species in core samples from the lower part of the Mesozoic sequence in Timboon No.5 bore.

+ - species present; cf - specimens similar to, but not identical with, a particular species; ? - doubtful representatives of a species