PE990866

PALYNOLOGICAL REPORT ON F.B.H. PORT CAMPBELL NO. 4 WELL

Spores, pollen, and microplankton obtained from core samples between 8520 feet and 4112 feet in Port Campbell No. 4 well form the basis of this report. The samples from between these levels in the well yielded microfloral assemblages that are identifiable with those reported previously (Evans 1961 and later, Dettmann 1963 and later) from other wells in the Otway Basin. However, the preservation of the contained microfossils is generally poor and their concentration in some of the samples (cores 8, 9, 20, 25, and 27) is extremely low. Moreover, several of the cores (16, 22, and 23) did not yield any plant microfossils.

The microfloral evidence detailed below and outlined in Table 1 indicates that the section between 8520 feet and 4112 feet in Port Campbell No. 4 well ranges in age from Aptian to Senonian. Succeeding horizons, which will be considered in a later report, contain microfloral assemblages suggestive of a Senonian or later age.

MICROFLORAL ASSEMBLAGES AND CORRELATIONS

Speciosus Assemblage (younger category): Extremely poorly preserved microfloras in which Dictyotosporites speciosus Cookson & Dettmann and Crybelosporites striatus (Cookson & Dettmann) are identifiable components were recovered from cores 26 and 27; core 26 also yielded Dictyotosporites filosus Dettmann. The presence of these species illustrates that the younger (Aptian) category of the Speciosus Assemblage (see Dettmann 1963) is represented in this interval, and indicates correlation with at least part of the section between 10,492 feet and 11,528 feet in Flaxmans No. 1 well (Dettmann 1964b).

Core 25 in Port Campbell No. 4 well yielded only sparse numbers of spores and pollen grains in which no diagnostic species are present, whilst in core 24 a single corroded specimen of Dictyotosporites speciosus was observed. The latter occurrence may suggest conformity with the Speciosus Assemblage although the possibility that the single representative of D. speciosus was derived from stratigraphically lower horizons must not be overlooked. Cores 20, 22, and 23 are either barren or yielded extremely sparse numbers of spores and pollen grains that are elements of the Speciosus, Paradoxa, and younger assemblages.

Paradoxa Assemblage: Good concentrations of identifiable spores and pollen grains were obtained from cores 19 and 20. Constituent species include Coptospora paradoxa (Cookson & Dettmann), Balmeisporites holodictyus Cookson & Dettmann, and Pilosisporites grandis Dettmann which indicate that the microfloras are referable to the Aptian-Albian Paradoxa Assemblage. Thus, on microfloral evidence these horizons are considered correlatives of sediments between 7473 feet and 9135 feet in Flaxmans No. 1 well and equivalents of the latter sequence (see Dettmann 1964b).

Assemblage II: The first appearance of angiospermous grains, Tricolpites sp., denotes the presence of Assemblage II in core 17. Associated spore species include Kraeuselisporites majus (Cookson & Dettmann), Crybelosporites striatus, and Cicatricosisporites sp. A. Microplankton are apparently absent from this level. Core 16 did not yield any plant microfossils whilst

cores 14 and 15 contain fair concentrations of spores (Appendicisporites sp. A., Crybelosporites striatus etc.), pollen grains (Tricolpites sp., Amosopollis cruciformis Cookson & Balme), and microplankton (Hystrichosphaeridium spp., Cyclonophelium sp.) that form associations referable to Assemblage II. The samples containing Assemblage II are considered to be Upper Albian-Cenomanian/Turonian in age and are correlated with sediments between 6882 feet and 7220 feet in Flaxmans No. 1 well and their equivalents (see Dettmann 1964b and later).

Assemblage III: This assemblage, diagnosed by cf. Gleicheniidites sp., first occurs in core 13 and was observed in succeeding core samples (8-12 incl.). Other spore species include Cicatricosisporites sp. A., Appendicisporites sp. A., and Laevigatosporites ovatus Wilson & Webster. Angiospermous pollen shows an increasing abundance in numbers and types present with decrease in depth. Microplankton are present in all samples, but their poor preservation precludes identification of several types. Stratigraphically significant microplankton species identified include: Gonyaulax edwardsi Cookson & Eisenack (core 12); Odontochitina operculata Deflandre (core 12); O. cribropoda Deflandre & Cookson (core 11); O. porifera Cookson (cores 10 and 11); Hexagonifera vermiculata (Cookson & Eisenack (core 8); and H. glabra Cookson & Eisenack (core 8). The stratigraphical occurrence of these species in Port Campbell No. 4 well is similar to that recorded in the neighbouring Port Campbell and Flaxmans wells (Evans 1961, 1962; Dettmann 1964a, 1964b). On this basis core 12 in Port Campbell No. 4 well is correlated with core 23 in Port Campbell No. 1 well and cores 5-7 in Port Campbell No. 2 well, whilst cores 8-11 are probably approximate equivalents of core 21 in Port Campbell No. 1 well, core 1 in Port Campbell No. 3 well, and core 16 in Flaxmans No. 1 well. As discussed previously (Dettmann 1964a), sediments containing Assemblage III are no older than Cenomanian/Turonian and probably range into the Senonian.

REMANIE FOSSILS

Microspores and pollen of Permian age were encountered in small numbers in the Upper Cretaceous horizons represented by cores 8 and 11.

Mary E. Dettmann,
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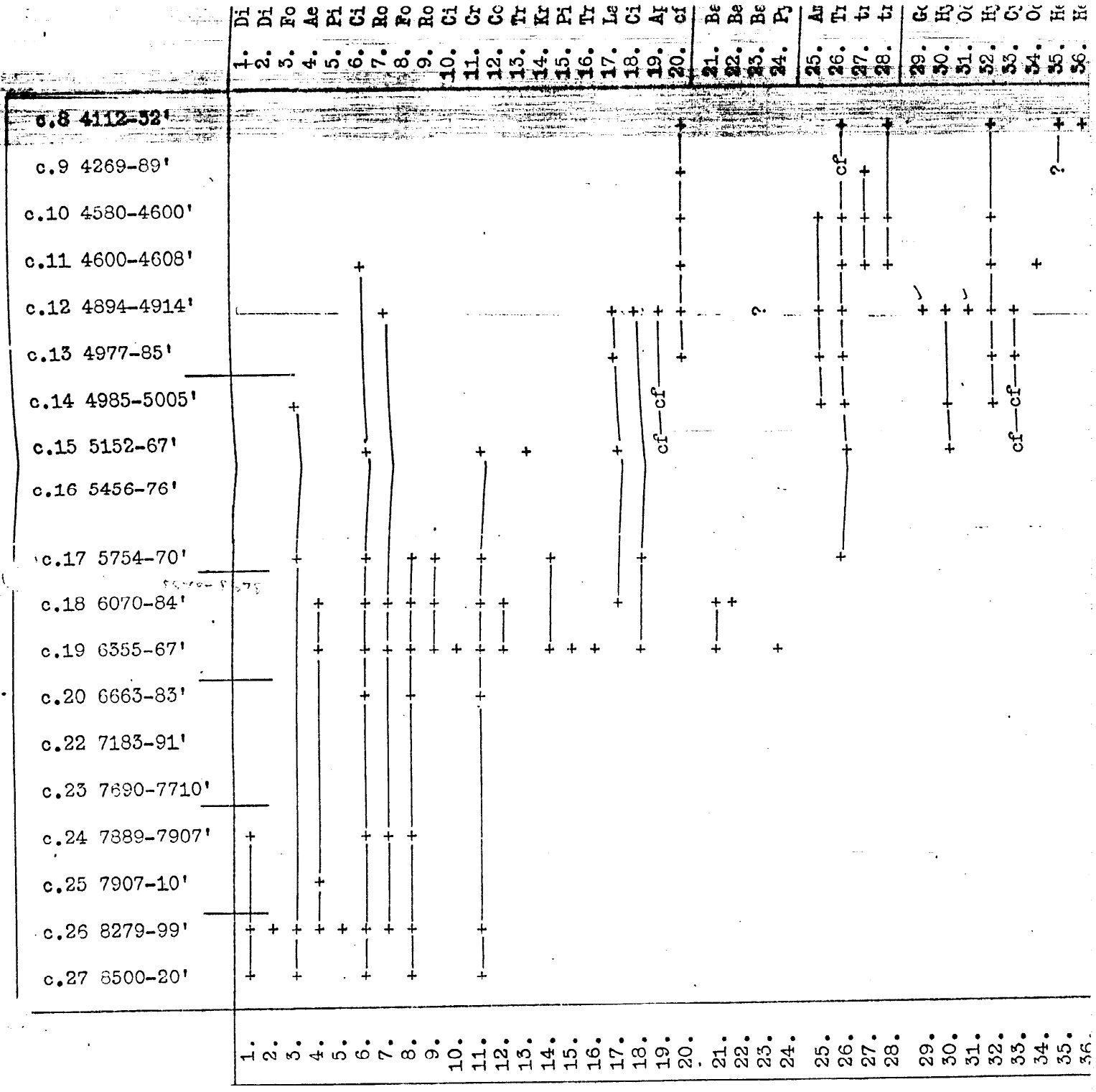

Table 1. Distribution of selected spore, pollen, and microplankton species in core samples from the lower part of the Mesozoic sequence in Port Campbell No.4 well.

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

Microspores

1. Dictyotosporites speciosus
2. Dictyotosporites filosus
3. Foraminisporis wonthaggiensis
4. Aequitriradites spinulosus
5. Pilosisporites notensis
6. Cicatricosisporites australiensis
7. Rouseisporites reticulatus
8. Foraminisporis asymmetricus
9. Rouseisporites simplex
10. Cicatricosisporites hughesi
11. Crybelosporites striatus
12. Coptospora paradoxa
13. Trilites cf. T. tuberculiformis
14. Kraeuselisporites majus
15. Pilosisporites grandis
16. Trilobosporites tribotrys
17. Laevigatosporites ovatus
18. Cicatricosisporites sp.A
19. Appendicisporites sp.A
20. cf. Gleicheniidites sp.

Megaspores

21. Balmeisporites holodictyus
22. Balmeisporites tridictyus
23. Balmeisporites glenelgensis
24. Pyrobolospora reticulata

Pollen

25. Amosopollis cruciformis
26. Tricolpites sp. (Tgillii or T pannosus)
27. triporate sp.A ?
28. triporate sp.B

Microplankton

29. Gonyaulax edwardsi
30. Hystrichosphaeridium complex
31. Odonotchitina operculata
32. Hystrichosphaeridium heteracanthum
33. Cyclonophelium distinctum
34. Odontochitina cribropoda
35. Hexagonifera vermiculata
36. Hexagonifera glabra
37. [illegible]

Core	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
c.8 4112-32'																				+
c.9 4269-89'																				+
c.10 4580-4600'																				+
c.11 4600-4608'						+														+
c.12 4894-4914'							+										+	+	+	+
c.13 4977-85'																	+			+
c.14 4985-5005'			+																cf	
c.15 5152-67'						+					+		+				+		cf	
c.16 5456-76'																				
c.17 5754-70'			+			+		+	+		+			+				+		
c.18 6070-84' (5770-5678)				+		+	+	+	+		+	+					+			
c.19 6355-67'				+		+	+	+	+	+	+	+		+	+	+		+		
c.20 6663-83'						+		+			+									
c.22 7183-91'																				
c.23 7690-7710'																				
c.24 7889-7907'	+					+	+	+												
c.25 7907-10'				+																
c.26 8279-99'	+	+	+	+	+	+	+	+			+									
c.27 8500-20'	+		+			+		+			+									

Core	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
c.8 4112-32'						+		+				+			+	+
c.9 4269-89'						cf	+								?	
c.10 4580-4600'					+	+	+	+				+				
c.11 4600-4608'						+	+	+				+		+		
c.12 4894-4914'			?		+	+			+	+	+	+	+			
c.13 4977-85'					+	+				+		+	+			
c.14 4985-5005'					+	+				+		+	cf			
c.15 5152-67'						+				+			cf			
c.16 5456-76'																
c.17 5754-70'						+										
c.18 6070-84'	+	+														
c.19 6355-67'	+			+												
c.20 6663-83'																
c.22 7183-91'																
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