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THE MESOZOIC STRATA OF BAUHINIA DOWNS 1:250,000 SHEET AREA

by

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SUMMARY

Of the fourteen assemblages of fossils listed from the Bauhinia Downs 1:250,000 Sheet area seven are marine, six non-marine and one inconclusive. They range in age from Neocomian to Aptian.

Sedimentation in the Bauhinia Downs area is similar to that of the Mount Young area. Initially, probably in Neocomian times, the conglomerate and quartz sandstone accumulated in inland lakes and sub-coastal embayments. This was followed by a marine transgression which commenced in the Neocomian on the Mount Young area to the north, but did not reach Bauhinia Downs 1:250,000 Sheet area until Aptian times. Clay and clayey sandstone were deposited. This phase of marine sedimentation seems to have ceased in the Aptian, but the area was once again submerged in uppermost Albian times.

INTRODUCTION AND ACKNOWLEDGEMENTS

Mesozoic strata of the Bauhinia Downs 1:250,000 Sheet area were examined during the 1960 field season when observations were made on lithology and palaeogeography, and Lower Cretaceous fossils were collected at fourteen localities. Results of field observations have been recorded in Skwarko (1961a, b) and these, together with results of detailed examinations of fossils and the close dating of strata provide material for the present paper.

In the field the writer has benefited by assistance and co-operation of the members of Bauhinia Downs and Hodgson Downs Field Parties, which is here acknowledged with sincere thanks.

FOSSIL LISTS

Marine macrofossils and plant remains from Bauhinia Downs 1:250,000 Sheet are arranged in the following list in alphabetical order:

	Fossiliferous localities, T.T.:										
	20	21	22	23	24	25	26	28	31	32	33	34
Pelecypoda:												
Astarte(?) sp. nov.		x										
Astarte(?) sp.								x				
Barbatia(?) sp.						x						
Camptonectes sp. nov. a						x						
Camptonectes sp. indet.						x						
Entolium sp.		x										
Exogyra cf. *E.* sp. nov.						x						
Fissilunula clarkei (Moore), 1870									x			
Maccoyella corbiensis (Moore), 1870		x										
Maccoyella sp.		x				x						
Nototrigonia cf. *cinctuta* Etheridge Jnr., 1902		x										
Tatella aptiana Whitehouse, 1925		x										
(?)*Thracia primula* Hudleston, 1890	x											
Trigonia sp. ind.									x			
Gastropoda:												
Gen. et sp. nov. aff. *Nerita*	x										x	
Cephalopoda: new species of Dimitobelidae	x	x										
Plants:												
Arthrotaxites sp.										x		
Brachyphyllum sp.			x	x		x				x		x
Elatocladus planus (Feistmantel)			x	x								
Elatocladus sp.							x					
Hausmannia sp.										x		
Microphyllopteris gleichenioides Oldham & Morris										x		x
Otozamites bechei Brongniart				x						x		x
Otozamites bengalensis (Morris)										x		
Pagiophyllum sp.				x						x		
Pterophyllum fissum Feistmantel			x				x			x		
Thinnfeldia pinnata Walkom										x		
Williamsonia sp.										x		

Open nomenclature has been used when listing fossil names. New generic and specific names will replace these in Bureau of Mineral Resources publications.

Plant fossils were determined by Mary E. White.

Altogether fourteen fossiliferous localities have been found in the Lower Cretaceous strata on the Bauhinia Downs 1:250,000 Sheet. Locality descriptions, fossils determinations and suggested ages of individual collections are listed below.

T.T.20: Borroloola 1-mile Sheet; 1½ miles west of Days Lagoon, approximately 18 miles west of Borroloola. Run 2A (E-C) Photo 5169 Point 3.

Pelecypoda: (?) Thracia primula Hudleston, 1890
Pelecypod frags indet.
Gastropoda: Gen. et sp. nov. aff. Nerita
Cephalopoda: new species of Dimitobelidae

Age: Aptian

T.T.21: Borroloola 1-mile Sheet; 1 mile west of Ryan Bend Waterhole on Batten Creek. About 20 miles at 15°S of W. from Borroloola. Run 2A (E-C) Photo 5169 Point 1.

Pelecypoda: Maccoyella corbiensis (Moore), 1870
Maccoyella sp.
Entolium sp.
Nototrigonia cf. cinctuta (Etheridge Jnr.), 1902
Astarte(?), sp. nov.
Tatella aptiana Whitehouse, 1925
Genus? sp. nov.
Pelecypods indet.

Cephalopoda: new species of Dimitobelidae

Age: Aptian

T.T.22: Batten Creek 1-mile Sheet; on Batten Creek, 4 miles south-east of Cow Lagoon (Clarke Creek). Run 5 Photo 5311 Point 7.

Pelecypoda: Pelecypods (?) indet.

Cephalopoda: Belemnites indet.

Age: Aptian

T.T.23: Yalco Creek 1-mile Sheet; approximately 15 miles north of Cow Lagoon. Run 2 Photo 5799 Point 2.

Plants: Elatocladus planus (Feistmantel)
Brachyphyllum stems
Pterophyllum fissum Feistmantel

Age: ?Neocomian

T.T.24 Mallapunyah 1-mile Sheet; 4 miles north-east of Top Station Hill (at junction of McArthur River and Tooginginie Creek). Run 12 Photo 5353 Point 14.

Plants: Elatocladus planus (Feistmantel)
Brachyphyllum type conifer twigs
Pagiophyllum type conifer stems
Otozamites bechei Brongniart

Age: ?Neocomian

T.T.25: Borroloola 1-mile Sheet; 1 mile east of Borroloola Jump Up; approximately 15 miles west of Borroloola. Run 3 Photo 5201 Point 6.

Barbatia(?) sp.
Macroyella sp. (large species)
Camptonectes sp. nov. a
Camptonectes sp. indet.
Exogyra cf. sp. nov.
Pelecypods indet.
Belemnites indet.
Brachiopods indet.

Age: Neocomian-
?Lower Aptian
transition beds

T.T.26: Borroloola 1-mile Sheet; 1¼ miles north of Borroloola. Run 3 Photo 5250 Point 1.

Plants: Pterophyllum fissum Feistmantel
Elatocladus sp.
Brachyphyllum sp.

Age: ?Neocomian

T.T.27: Borroloola 1-mile Sheet; 1 mile north-west of Borroloola. Run 3 Photo 5205 Point 3.

Plants; indet.

Age: ?Neocomian

T.T.28: Batten Creek 1-mile Sheet; Cliffs overlooking J. Smith's 1960 Base Camp site. Run 7 Photo 5277 Point 8. Pelecypoda: Astarte(?) sp.
Cephalopoda: Belemnites spp. indet.
Age: ? Aptian

T.T.29: O.T. Downs 1-mile Sheet; 5 miles west along O.T. Downs Road, going from Three Knobs. Run 9 Photo 5435 Point 1.

Worm trails?

Age: Lower Cretaceous

T.T.31: Bauhinia Downs 1-mile Sheet; 5 miles at north 30° west from the Old Bauhinia Downs Homestead. Run 3A Photo 5107 Point 13.

Pelecypods: Fissilunula clarkei (Moore), 1870
Trigonia sp. ind.
Plants: indet.

Age: Aptian

T.T.32: Bauhinia Downs 1-mile Sheet; 2 miles north-west from the Old Bauhinia Downs Homestead. Run 3A Photo 5107 Point 11.

Plants: Bennetitalean flowers
Williamsonia sp.
Pterophyllum fissum Feistmantel
Otozamites bengalensis (Morris)
Otozamites bechei Brongniart
Brachyphyllum foliage and stems
Pagiophyllum foliage and stems
Cone of *Arthrotaxites* type
Thinnfeldia pinnata Walkom
Microphyllopteris gleichenioides Oldham & Morris
Hausmannia sp.
Petrified stem
Silicified wood

Age: ? Neocomian

T.T. 33: Bauhinia Downs 1-mile Sheet; 5 miles north-west of the Old Bauhinia Downs Homestead ruins. Run 3A Photo 5107 Point 12.

Gastropoda: Gen. et sp. nov. aff. *Nerita*

Worm tubes?

Age: ? Neocomian

T.T. 34: Batten Creek 1-mile Sheet; approximately 8 miles north-east of the Three Knobs; 6 miles north of Leila Top Crossing. Run 8 Photo 5927 Point 7.

Plants: *Microphyllopteris gleichenioides* Oldham & Morris
Brachyphyllum sp. (frags.)
Otozamites bechei Brongniart

Age: ? Neocomian

DISCUSSION

Of the fourteen fossil assemblages listed in the preceding pages, seven reflect a marine environment, six probably a non-marine environment, and one is inconclusive.

The conditions of sedimentation on the Bauhinia Downs 1:250,000 Sheet area were similar to those on the Mount Young Sheet (Skwarko, 1962a). Initially non-marine sedimentation took place, sometime in the Neocomian in sub-coastal lagoons near the sea and in lakes farther inland. Saccharoidal sandstone and marginal conglomerate were the predominant sediment and the only fossils found are plant remains. No accurate dating based exclusively on plants is possible, and individual floras indicate Upper Jurassic(?)-Lower Cretaceous age. Because, however, this sandstone is overlain apparently conformably by Neocomian fossiliferous marine sediments which rapidly pass into beds of Aptian age it is suggested that their age is Neocomian, possibly Lower Neocomian.

Further downwarping of the narrow continental shelf gave rise to a marine transgression which proceeded inland from the coast in the Neocomian times. Claystone and clayey quartz sandstone were deposited by the advancing sea which reached the north-eastern and northern portions of the sheet at the beginning of Aptian times. Marine Mollusca and Brachiopoda thrived in this shallow marginal sea.

The marine transgression probably did not advance farther than about half way across the Bauhinia Downs area, but in the south-western corner of the Sheet thick claystone crops out which is topographically higher than the beds to the north and which is part of the very extensive sheet of marine claystone stretching from Calvert Hills area to the north-west as far as the Fergusson River 1:250,000 Sheet area, and beyond. It may have extended to Darwin. This claystone was probably deposited in the uppermost Albian times and although apparently barren in the area under discussion, carries marine micro- and macro-fossils elsewhere (Skwarko, 1962b). It is thought to have blanketed the Neocomian and Aptian marine beds, but has since been eroded off together with a large portion of the Neocomian and Aptian strata by the rapid scarp retreat and the less rapid vertical erosion.

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