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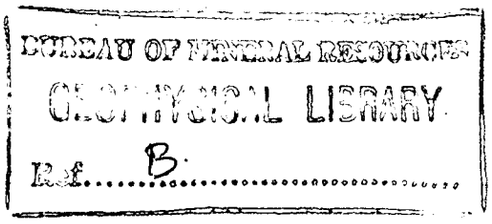

CRETACEOUS MICROFOSSILS FROM ANDADO STATION, NORTHERN TERRITORY

by

G.R.J.Terpstra and P.R.Evans

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Cretaceous Microfossils from Andado Station, Northern Territory

by

G.R. J. Terpstra and P.R. Evans.

SUMMARY

Ditch samples from the Rumbalara Shale in the Birthday Bore, Andado Station, in the south eastern corner of the Northern Territory yielded Lower Cretaceous foraminifera, spores, pollens and microplankton. The fossils permit correlation of the Rumbalara Shale with the lower Wilgunya Formation of the northern Euromanga Basin and with the Roma Formation of the Surat Basin. They confirm a similar correlation of the Rumbalara Shale suggested by Skwarko (1962) on the basis of macrofossils.

INTRODUCTION

Nine ditch samples from the Birthday Bore (G.53/7-16) 10 miles north of Andado Station New Homestead, located towards the south eastern corner of the Northern Territory, and on the western margin of the Simpson Desert were submitted by the Resident Geologist, Alice Springs, for micropalaeontological study. The Resident Geologist recorded a bore section of 70 feet of Cainozoic, about 480 feet of Cretaceous Rumbalara Shale and about 10 feet of De Souza Sandstone. The bore is of particular interest as it provides the first section of unweathered Rumbalara Shale available for micropalaeontological study, although Crespin (Appendix 1 in Sullivan & Opik, 1951) obtained forms of the Radiolaria Cenosphaera and Dictyomitra from weathered samples of the formation. All samples were examined for foraminifera (G.R.J. Terpstra); two were processed for spores and microplankton (P.R. Evans).

OBSERVATIONS

The notes listed below include lithological descriptions supplied by I.P. Youles, Resident Geologist, Alice Springs.

Quaternary

0 -	10 feet	Pale brown, medium to coarse desert sand.

?Tertiary

10 -	25 feet	Red brown, ferruginous, silty sand, with calcrete

Tertiary

25 -	70 feet	Coarse silty sand and gravel - chippings of yellow brown and grey billy and quartzite.

?Cretaceous Rumbalara Shale

70 - 100 feet Mottled yellow and light grey, clayey siltstone - with rounded grains of transparent green mineral (?glauconite, as below). Probably weathered Rumbalara Shale; yellow portions indicate lateritization. No foraminifera.

Cretaceous Rumbalara Shale

100 - 125 feet Dark slate grey, soft, clayey siltstone, with rounded grains of transparent green mineral (?glauconite). No foraminifera.

125 - 150 feet Slate grey, hard, calcareous siltstone, with rounded grains of transparent green mineral. No foraminifera. Palynomorphs included:

Spores and Pollens:

Cyathidites australis rimalis Balme
Gleicheniidites circinidites (Cookson)
Cicatricosisporites dorogensis Potonie & Gelletich
Schizosporis reticulatus Cookson & Dettmann
Lycopodiumsporites austroclavatidites (Cookson)
Disaccites spp. undiff.
Classopollis torosus (Reissinger)
Microcachryidites antarcticus Cookson
Inaperturopollenites limbatus Balme

Megaspore:

Pyrobolospora reticulata Cookson & Dettmann

Microplankton:

Veryhachium sp.
Hystrichosphaera sp.
Odontochitina operculata Defl.
Muderongia tetracantha (Cookson & Eisenack)
Chlamydophorella nyei Cookson & Eisenack
Gonyaulax edwardsi Cookson & Eisenack
?Canningia sp.
Leiospheres indet.

Several indeterminate, presumably new species were also present.

150 - 230 feet Slate grey, soft, clayey siltstone, with rounded grains of transparent green mineral (much smaller than those observed above, but still of sand size).

Foraminifera:

Ammodiscus cretaceus (Reuss, 1845)
Ammobaculoides cf. A. romaensis Crespin 1953.
Cibicides sp.
Lenticulina sp.
Haplophragmoides arenatus sp. nov. Crespin MS 1962

230 - 285 feet Green grey, hard, slightly calcareous, glauconitic siltstone. Glauconite 50%; marcasite an accessory. No foraminifera.

285 - 430 feet Slate grey, soft, slightly clayey siltstone with accessory marcasite.

Foraminifera:

Ammobaculites erectus sp. nov. Crespin MS 1962
A. fisheri Crespin 1953
A. fragmentarius sp. nov. Crespin MS 1962
A. minimus Crespin 1953
Bimonilina variana Eicher 1960
Miliammina sproulei Nauss var. gigantea Mellon & Wall 1956
Textularia anacooraensis Crespin 1953
Trochammina sp.
Verneuilina howchini Crespin 1953

430 - 441 feet Slate grey, soft siltstone with chippings of clear quartz, glauconite and accessory marcasite.

Foraminifera:

Ammobaculites fisheri Crespin 1953
A. fragmentarius Cushman 1927
A. cf. A. succinctus sp. nov. Crespin MS 1962
Bimonilina variana Eicher 1960
Haplophragmoides gigas Cushman 1927
Miliammina sproulei Nauss var. gigantea Mellon & Wall 1956
Textularia anacooraensis Crespin 1953
Trochammina sp.

Spores and Pollens:

Cyathidites australis rimalis Balme
Sphagnumsporites australis (Cookson)
Gleicheniidites circinidites (Cookson)
Cicatricosisporites dorogensis Potonie & Gelletich
C. cooksonii Balme
Lycopodiumsporites cf. L. circolumenus Cookson & Dettmann
L. tenuis Balme
Disaccites spp. undiff.
Vitreisporites pallidus (Reissinger)
Microcachryidites antarcticus Cookson
Inaperturopollenites limbatus Balme
Classopollis torosus (Reiss)

Microplankton:

Dingodinium cerviculum Cookson & Eisenack
Muderongia mcwhaei Cookson & Eisenack
Hystrichosphaeridium pulcherrimum Deflandre & Cookson
Hystrichosphaera sp.
Veryhachium sp.
aff. Tasmanites

441 - 495 feet Light grey, slightly clayey, sandy siltstone with nodules of marcasite. No foraminifera.

495 - 550 feet Off white, slightly clayey, sandy siltstone. No foraminifera.

Mesozoic De Souza Sandstone

550 - 560 feet White, medium to coarse sand.

COMMENTS

The foraminifera observed in cuttings between 150 and 495 feet are all known from Lower Cretaceous strata of Australia. At present, there is insufficient knowledge of the precise stratigraphical range of the species within the Lower Cretaceous, mainly on account of lack of stratigraphic control. In general, however, the microfauna indicates that the bore section may be correlated with the Wilgunya Formation below the Toolebuc Member of the northern Eromanga Basin on the basis of a recent examination of outcrop samples from that area (Terpstra, 1963).

This conclusion is fully supported by the palynological evidence from 430-441 feet. Dingodinium cerviculum is a very good marker of a basal zone within the lower Wilgunya Formation of the Eromanga Basin and of the Roma Formation of the Surat Basin (Evans, 1962).

The microfloras from 125-150 feet suggest an age younger than the D. cerviculum zone.

Odontochitina operculata and Pyrobolospora reticulata indicate this, but M. tetracantha is typically pre-Toolebuc in occurrence so that the youngest Rumbalara Shale in this bore section is probably still as old as the lower Wilgunya Formation.

The D. cerviculum bearing sample is best regarded as Aptian in age, but the O. operculata sample could be Albian as it is becoming apparent that the Aptian/Albian boundary is lower than the base of the Toolebuc Member, and probably lies close to the top of the D. cerviculum zone.

These micropalaeontological results generally bear out Skwarko's determination (1962) of an Aptian age for the Rumbalara Shale on the basis of outcropping faunas listed by Sullivan & Opik (1951). The Rumbalara Shale may be considered a correlate of the Roma Formation of the Surat Basin.

The results also confirm the suggestion offered by Crespin & Evans (1962) that the Rumbalara Shale is older than Cretaceous deposits occurring along the Plenty River (Hay River Sheet) on the northern side of the Simpson Desert.

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