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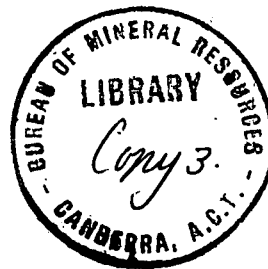
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MICROPALAEONTOLOGICAL EXAMINATION OF SAMPLES FROM
THREE BONES IN NORTHERN N.S.W.

by

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MICROPALAEONTOLOGICAL EXAMINATION OF SAMPLES FROM

THREE BORES IN NORTHERN NEW SOUTH WALES

Samples from three bores were submitted by the Water Conservation and Irrigation Commission, of New South Wales for micropalaeontological examination namely:

1. Bore No. 8271, K.F. Robinson's "Talyealye" property,
Hungerford
2. Bore No. 8290, J.T. O'Connor's "Shannon" property, Bourke.
3. Bore No. 8302, J.J. Doohan, "Yarralee" property,
Wanearring.

The majority of the samples contained foraminifera, the species in the main being referable to those described by Crespin in her paper "Lower Cretaceous Foraminifera from the Great Artesian Basin, Australia" in the Contributions from the Cushman Foundation for Foraminiferal Research, vol. 4 pt. 1, February 1953. An attempt has been made to refer the foraminiferal assemblages to the broad zonal classification suggested in the report on Bore No. 8264 (I.C. 11/7/52).

Radiolaria, ostracoda, small mollusca and fish teeth were also present in some samples.

A detailed description of the microfaunal content of the samples from these bores is given below.

1. Bore No. 8271, K.F. Robinson's "Talyealye", Hungerford

100 feet - Limonitic sandy siltstone with fragments of indeterminate arenaceous foraminifera.

150 feet - Limonitic siltstone. No microfossils

250 feet - Grey carbonaceous siltstone with foraminifera and ostracoda.

Foraminifera:

<u>Enantiotalina cf. communis</u>	<u>Marginulopsis australis</u>
<u>Globigerina cf. planispira</u>	<u>Marginulina marreensis</u>
<u>Haplophragmoides chapmani</u>	<u>Robulus warregoensis</u>

Ostracoda: cf. Cytheropteron concentricum

250 feet - Grey carbonaceous siltstone, with foraminifera

Foraminifera: Haplophragmoides chapmani (common)

305 feet - Grey carbonaceous siltstone. No microfossils.

350 feet - Grey carbonaceous siltstone with abundant pyrite.

450 feet - Grey carbonaceous siltstone with fragments of ostracoda.

500 feet - Grey carbonaceous siltstone with pyritic replacement of plant remains.

550 feet - Similar to 500 feet.

600 feet - Grey carbonaceous siltstone with foraminifera.

Foraminifera:

<u>Ammobaculoides romaensis</u>	<u>Haplophragmoides cf. globosa</u>
<u>Bigennerina loeblichae</u>	<u>Robulus gunderboeckaeensis</u>

650 feet - Grey carbonaceous siltstone with foraminifera and ostracoda.

Foraminifera:

Ammobaculoides sp. Vaginulina sp.
Robulus ap. Valvulineria parvula

Ostracoda: cf. Cytheropteron concentricum

700 feet - Grey carbonaceous siltstone with fragmentary foraminifera (Cf. Haplophragmoides)

750 feet - Grey carbonaceous siltstone with foraminifera.

Foraminifera: Robulus gunderbookaensis
Robulus sp.
Trochammina raggatti

800 feet - Grey carbonaceous siltstone with foraminifera and ostracoda.

Foraminifera:

Haplophragmoides chapmani Trochammina raggatti
Lenticulina australiensis Valvulineria parvula

Ostracoda: cf. Cytheropteron concentricum

850 feet - Grey carbonaceous siltstone with foraminifera.

Foraminifera: Ammobaculites minimus
Trochammina raggatti
Verneulinoides schizea

900 feet - Grey carbonaceous siltstone with foraminifera.

Foraminifera:

Globulina lacrima Trochammina minuta
Marginulina sp. Trochammina raggatti
Spiroplectammina cushmani Verneulinoides schizea
Textularia anacooraensis

950 feet - Grey carbonaceous siltstone with foraminifera.

Foraminifera:

Ammobaculites minimus Spiroplectammina cushmani
Haplophragmoides chapmani Spiroplectammina edgelli
Haplophragmoides dickinsoni Trochammina raggatti
Marginulina sp. Verneulina howchini
Quinqueloculina aff. nanna

1,000 feet - Grey carbonaceous siltstone with foraminifera.

Foraminifera:

cf. Ammobaculites variabilis Haplophragmoides dickinsoni
Haplophragmoides chapmani Lenticulina australiensis

1,050 feet - Quartz sand with a few carbonaceous fragments.

1,100-1,400 feet - Quartz sand.

Notes on the Samples

Bore No. 8271 is situated on "Talyealye" property, Hungerford which is about 125 miles northwest of Bourke. It is the most northerly bore that has been examined in the northwest part of the Great Artesian Basin in New South Wales.

Twenty seven samples were submitted for examination and the majority of them contained microfossils. The topmost

but from 200 feet down to 1,000 feet an assemblage of species typical of the Lower Cretaceous beds of the Great Artesian Basin were present. The unfossiliferous sands from 1,050 feet down to 1,400 feet are probably of Jurassic age.

The assemblage of foraminifera is dominated by arenaceous tests, but calcareous genera such as Marginulina, Robulus and Lenticulina are moderately common and well preserved. Amongst the arenaceous forms, Haplophragmoides chapmani, was common at 250 feet.

In referring the beds in this bore to the broad zonal classification based on the distribution of foraminifera in samples from Bore No. 8264 (report by I.C. 11/7/52), the abundance of Haplophragmoides chapmani at 250 feet and the persistence of the species down to 1,000 feet and the occurrence of Spiroplectammina cushmani at 950 feet, suggest that the samples in Bore No. 8271 from 250 feet down to 1000 feet are in the Haplophragmoides chapmani-Spiroplectammina cushmani zone.

2. Bore No. 8290, J.T. O'Connor's "Shannon", Bourke

41-150 feet - Quartz sand

200 feet - Quartz sand with abundant pyrite.

250 feet - Quartz sand with fragments of carbonaceous siltstone and foraminifera and fragments of fish remains.

Foraminifera: Haplophragmoides sp.
Marginulinopsis subretaceus
Robulus sp.
Spiroplectammina edgelli

Pisces: Teeth indeterminate

300 feet - Sandstone and carbonaceous siltstone with foraminifera.

Foraminifera:

<u>Anomalina mawsoni</u>	<u>Marginulinopsis australis</u>
<u>Epistomina australiensis</u>	<u>Robulus</u> sp.
<u>Globulina</u> cf. <u>lacrima</u>	<u>Valvulineria parvula</u>
<u>Haplophragmoides dickinsoni</u>	

961 feet 8 inches - Sandy carbonaceous siltstone with foraminifera and pyritic replacements of foraminifera.

Foraminifera:

<u>Haplophragmoides chapmani</u>	<u>Spiroplectammina</u> cf. <u>edgelli</u>
<u>Globulina</u> cf. <u>gibba</u>	<u>Verneulinoides</u> cf. <u>schizea</u>
cf. <u>Siphotextularia washitensis</u>	

1,000 feet - Sandy carbonaceous siltstone with numerous arenaceous foraminifera, chiefly crushed tests.

Foraminifera:

<u>Ammobaculoides romaensis</u>	cf. <u>Siphotextularia washitensis</u>
<u>Haplophragmoides chapmani</u> (C)	<u>Spiroplectammina cushmani</u>
<u>Haplophragmoides dickinsoni</u>	<u>Spiroplectammina edgelli</u>
<u>Pelosina lagencoides</u>	<u>Trochammina ruggatti</u>
<u>Quinqueloculina</u> aff. <u>nanna</u>	<u>Verneulinoides</u> cf. <u>schizea</u>

1,015 feet - Glauconitic sand

1,050-1135 feet - Quartz sand.

Notes on the Samples

Bore No. 8290 is situated on "Shannon" property

at Bourke.

Twelve samples were submitted for micro-examination. Samples from 41 feet down to 200 feet were unfossiliferous sands. The carbonaceous sandy siltstone from 250 feet down to 1,000 feet contained the typical assemblage of Lower Cretaceous foraminifera. Unfortunately no samples were available between the depths of 300 feet and 961 feet 8 inches. The sample at 1,015 feet consisted of glauconitic sand and may probably represent the base of the Lower Cretaceous. The unfossiliferous sands from 1,050 feet down to 1,135 feet are most probably Jurassic.

Calcareous foraminifera are prominent in the sample at 250 feet and 300 feet. With the presence of Valvulineria parvula (formerly V. infracretacea) and Anomalina mawsoni at 300 feet, these beds are referred to the Anomalina mawsoni-Valvulineria parvula zone suggested in the report on Bore No. 8264 (I.C., 11/7/52).

The assemblage of foraminifera in the other two samples at 961 feet 8 inches and at 1,000 feet respectively, is dominated by araneous forms in which Haplophragmoides chapmani is well represented, especially at 1,000 feet. Spiroplectammina cushmani is also present in that sample. The assemblage in these two samples places them in the Haplophragmoides chapmani-Spiroplectammina cushmani zone.

3. Bore No. 8302, J.J. Doohan's "Yarralee", Wanaaring

100-300 feet - Quartz sand

350-400 feet - Quartz sand with abundant glauconite

450 feet - Grey carbonaceous sandy siltstone with fragments of indeterminate plant remains, glauconite and glauconitic replacement of foraminifera, pyrite and a few radiolaria.

Radiolaria: Porodiscus sp.
Cenoshpaera sp.

500 feet - Grey carbonaceous sandy siltstone with foraminifera, molluscan fragments and ostracoda.

Foraminifera: Anomalina mawsoni
Vaginulinopsis sp. nov.

Mollusca: Dentalium sp.
Natica sp.

Ostracoda: cf. Cytheropteron concentricum

550 feet - Grey carbonaceous siltstone with pyrite, foraminifera and indeterminate molluscan fragments

Foraminifera:

<u>Anomalina plummerae</u>	<u>Robulus warregoensis</u>
<u>Epistomina australiensis</u>	<u>Robulus</u> sp.
<u>Haplophragmoides dickinsoni</u>	

600 feet - Grey carbonaceous sandy siltstone with foraminifera chiefly calcareous species.

Foraminifera:

<u>Anomalina plummerae</u>	<u>Robulus gaultinus</u>
<u>Epistomina australiensis</u>	<u>Robulus warregoensis</u>
<u>Marginulina marreensis</u>	<u>Trochammina latta</u>
<u>Neobulimina minima</u>	

650 feet - Grey carbonaceous sandy siltstone with foraminifera ostracoda and fish remains.

Foraminifera:

<u>Epistomina australiensis</u>	<u>Saracenaria</u> sp.
<u>Haplophragmoides</u> sp.	<u>Trochammina</u> lattai
<u>Lenticulina australiensis</u>	<u>Trochammina</u> minuta
<u>Robulus warregoensis</u>	

Ostracoda: cf. Cytheropteron concentricum

Pisces: Teeth indeterminate

700 feet - Grey carbonaceous sandy siltstone with abundant pyrite, foraminifera chiefly calcareous species molluscan fragments and ostracoda.

Foraminifera:

<u>Anomalina plummerae</u>	<u>Marginulina marreensis</u> *
<u>Epistomina australiensis</u>	<u>Robulus gunderabookaensis</u>
<u>Haplophragmoides</u> sp.	

Ostracoda: cf. Cytheropteron concentricum

750 feet - Grey carbonaceous, sandy siltstone with abundant pyrite, also foraminifera, radiolaria, and ostracoda with many tests replaced with pyrite.

Foraminifera:

<u>Anomalina plummerae</u>	<u>Haplophragmoides</u> sp.
cf. <u>Alabamina</u>	<u>Lenticulina australiensis</u>
<u>Arenobulimina</u> sp.	<u>Lenticulina</u> sp.
<u>Ammodiscus</u> cf. <u>gaultinus</u>	<u>Marginulina</u> sp.
<u>Haplophragmoides chapmani</u>	<u>Pseudoglandulina</u> sp. nov.
<u>Haplophragmoides dickinsoni</u>	<u>Robulus warregoensis</u>

Radiolaria: Dictyomitra australis

Ostracoda: cf. Cytheropteron concentricum

950 feet - Grey carbonaceous siltstone with foraminifera.

Foraminifera: Haplophragmoides sp.
Haplophragmoides chapmani
Trochammina minuta

1,000 feet - Grey sandy siltstone with foraminifera and pyritic replacement of ? belemnite.

Foraminifera:

<u>Epistomina australiensis</u>	<u>Marginulinopsis subcretaceus</u>
<u>Haplophragmoides chapmani</u>	<u>Robulus</u> sp.
<u>Haplophragmoides</u> aff. <u>concava</u>	<u>Saracenaria</u> cf. <u>acutauricularis</u>
<u>Marginulina marreensis</u>	<u>Verneulinoides</u> cf. <u>schizea</u>

1,050-1,150 feet - Quartz sand.

Note on the Samples

Bore No. 8302 is situated on "Yarralee" property, Wanaaring, northwest of Bourke.

Nineteen samples were submitted for micro-examination. Quartz sands were present from 100 feet down to 300 feet. At 350 and 400 feet, the quartz sand contained abundant glauconite which probably represented the highest bed of the Lower Cretaceous in this bore. The samples from 450 feet down to 1,000 feet contained an assemblage of typical Lower Cretaceous foraminifera as well as radiolaria, ostracoda, small mollusca and indeterminate fish teeth. The unfossiliferous sands from 1,050 feet down to 1,150 feet are most probably of Jurassic age.

The calcareous foraminifera were well represented in these samples the number of tests outnumbering the arenaceous forms which usually dominate the assemblages. The small rotaline Epistomina australiensis was unusually common. Although Anomalina mawsoni was only present in one sample at 500 feet and Haplophragmoides chapmani in three of the deepest samples the predominance of calcareous forms suggests that these beds belong to the Anomalina mawsoni-Valvulineria parvula zone of the report on Core No. 8264 (11/7/52)

G. Chapin