

COMMONWEALTH OF AUSTRALIA



DEPARTMENT OF NATIONAL DEVELOPMENT
BUREAU OF MINERAL RESOURCES
GEOLOGY AND GEOPHYSICS

RECORDS:

1955/32

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LOWER CRETACEOUS MICROFOSSILS FROM CHERWELL NO. 1 WELL,
MARYBOROUGH, QUEENSLAND.

by

I. CRESPIN.

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LOWER CRETACEOUS MICROFOSSILS FROM CHERWELL

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Cuttings from the Cherwell No.1 Bore of Lucky Strike Drilling Company, near Isis Junction, north of Maryborough, Queensland were received on February 4th, 1955 from Oil Drilling and Exploration Ltd (through Lucky Strike Drilling Company) for micropalaeontological investigation. These samples were from the depth of 500 feet down to 8,000 feet. Samples from the surface down to 500 feet were not included because of the destruction of identification tags. However, the Geological Survey of Queensland had a set covering this depth and a portion of these was kindly made available by the Chief Government Geologist of Queensland for examination.

More than 1,200 samples were submitted; these had been taken mainly at intervals of 5 feet. Samples were examined for microfossils at every 50 feet but where further information was necessary regarding the stratigraphic range of certain species, samples were examined at more frequent intervals.

The lithology of the cuttings throughout the 8,000 feet of drilling consisted chiefly of light grey to dark grey and almost black carbonaceous shales and sandstones. From the surface down to 1385 feet, the sediments were chiefly light to dark grey but at 1,400 feet down to the last sample at 8,000 feet, dark grey to black carbonaceous shales were predominant.

The samples from the surface down to 1,890 feet were unfossiliferous. In the sample, 1900-1,905 feet, foraminifera were discovered. From that depth down to 5,655 feet, foraminifera of Lower Cretaceous age and radiolaria were present in many samples.

A detailed description of the cuttings is given below.

0-1385 feet - Grey to dark grey, carbonaceous sandstone and shale, with some fragments of coal. No microfossils.

1385-1850 feet - Grey to dark grey, carbonaceous sandstone and dark grey to black carbonaceous shale with micc. No microfossils.

1850-1860 feet - Dark grey carbonaceous shale with abundant green glauconite and pyrite.

1860-1900 feet - Dark grey carbonaceous shale. No microfossils.

1900-1905 feet - Dark grey carbonaceous shale with foraminifera.

Foraminifera: Ammodiscus milletianus

1905-2030 feet - Dark grey carbonaceous shale. No microfossils.

2030-2040 feet - Dark grey carbonaceous shale with foraminifera.

Foraminifera: Ammodiscus milletianus
Gyroidina sp.
Haplophragmoides sp.
Lenticulina sp.
Marginulinopsis subcretaceus
Marginulina sp.

2040-2050 feet - Dark grey carbonaceous shale with foraminifera.

Foraminifera: Anomalina mawsoni
Saracenaria triangularis

2050-2060 feet - Dark grey carbonaceous shale with foraminifera.

Foraminifera: Ammodiscus milletianus

2060-2100 feet - Dark grey carbonaceous shale. No microfossils.

2100-2110 feet - Dark grey carbonaceous shale with fragments of ? Inoceramus.

2110-2210 feet - Grey to dark grey carbonaceous shale with foraminifera and radiolaria.

Foraminifera: Ammodiscus milletianus
Fragment of indeterminate
Cristellarian

Radiolaria: Cenosphaera sp.

2240-2270 feet - Grey to dark grey carbonaceous shale with foraminifera and radiolaria.

Foraminifera: Anomalina mawsoni
Valvulineria infracretacea

Radiolaria: Cenosphaera sp.

2300-2310 feet - Grey to dark grey carbonaceous shale with foraminifera and radiolaria.

Foraminifera: Anomalina mawsoni (common)
Marginulina sp.
Saracenaria sp.

Radiolaria: Cenosphaera sp.

2350-2360 feet - Grey to dark grey carbonaceous shale with foraminifera and radiolaria.

Foraminifera: Anomalina mawsoni
Marginulina cf. bullata
Vaginulina sp. nov.
Valvulineria infracretacea

Radiolaria: Cenosphaera sp.
Porodiscus sp.

2400-2410 feet - Grey to dark grey, micaceous, carbonaceous shale with foraminifera and radiolaria.

Foraminifera: Anomalina mawsoni
Genus indet.

Radiolaria: Cenosphaera sp.
Porodiscus sp.

2450-2460 feet - Grey to dark grey, micaceous, carbonaceous shale with foraminifera and radiolaria.

Foraminifera: Anomalina mawsoni
Spiroplectammina edgelli
Genus indet.

Radiolaria: Porodiscus sp.

2500-2510 feet - Grey to dark grey, micaceous, carbonaceous shale. No microfossils.

2550-2560 feet - Grey to dark grey, micaceous, carbonaceous shale, with foraminifera.

Foraminifera: Anomalina mawsoni
Bigenerina loeblichii
Lenticulina sp.
? Pyrulina sp.

2600-2610 feet - Grey to dark grey, micaceous, carbonaceous shale, with foraminifera and radiolaria.

Foraminifera: Anomalina mawsoni (common)
Lenticulina australiensis
Valvulineria infracretacea

Radiolaria: Cenosphaera sp.
Porodiscus sp.

2650-2655 feet - Grey to dark grey micaceous, carbonaceous shale, with foraminifera and indeterminate shell fragments.

Foraminifera: Globulina minuta
Valvulineria infracretacea

2700-2710 feet - Grey to dark grey, carbonaceous shale with indeterminate shell fragments.

2750-2760 feet - Grey to dark grey carbonaceous shale with a few indeterminate foraminifera.

2800-2860 feet - Grey to dark grey carbonaceous shale with a few foraminifera, chiefly crushed tests.

Foraminifera: Anomalina mawsoni
Lenticulina sp.
Marginulina sp.

2900-2910 feet - Grey to dark grey carbonaceous shale with grains of green glauconite, and a few foraminifera and radiolaria.

Foraminifera: Lenticulina sp. (small)
Radiolaria: Cenosphaera sp.

2950-2960 feet - Grey to dark grey carbonaceous shale with foraminifera, chiefly crushed, and radiolaria.

Foraminifera: Anomalina mawsoni
Haplophragmoides sp.
Marginulina sp.

Radiolaria: Cenosphaera sp.
Porodiscus sp.

- 2990-3010 feet - Grey carbonaceous siltstone and fragments of white siltstone. No microfossils.
- 3050-3060 feet - Grey to dark grey carbonaceous shale with a few radiolaria.
- Radiolaria: Porodiscus sp.
- 3100-3110 feet - Dark grey to black, carbonaceous shale with foraminifera and radiolaria.
- Foraminifera: Anomalina mawsoni
Lenticulina cf. australiensis
cf. Marginulina sp.
Trochammina minuta
- Radiolaria: Cenosphaera sp. (Pyritic)
- 3150-3160 feet - Dark grey to black carbonaceous shale, with foraminifera.
- Foraminifera: Ammobaculites fisheri
Anomalina mawsoni
Lagena globosa
Lenticulina sp. (small)
Valvulineria infracretacea
- 3200-3205 feet - Dark grey to black micaceous, carbonaceous shale with foraminifera and a small fish tooth.
- Foraminifera: Ammobaculites minimus
Anomalina aff. plummerae
Anomalina mawsoni
Lenticulina sp. (small)
Marginulinopsis australis
- 3250-3255 feet - Dark grey to black carbonaceous shale and grey carbonaceous sandstone with foraminifera.
- Foraminifera: Ammobaculites sp.
Anomalina mawsoni
Lenticulina cf. australiensis
Marginulina sp.
Valvulineria infracretacea
- 3300-3305 feet - Dark grey sandy shale with foraminifera poorly preserved.
- Foraminifera: Trochammina cf. minuta
Genera indet.
- 3350-3355 feet - Dark grey sandy carbonaceous shale. No microfossils.
- 3400-3405 feet - Dark grey micaceous, carbonaceous, sandy shale with poorly preserved foraminifera.
- 3450-3455 feet - Dark grey micaceous, carbonaceous, sandy shale with foraminifera, many tests crushed and radiolaria.
- Foraminifera: Ammobaculites cf. minimus
Anomalina mawsoni
Genera indet.
- Radiolaria: Porodiscus sp.

- 3495-3500 feet - Dark grey carbonaceous shale and fine grained sandstone with foraminifera.
Foraminifera: Ammobaculites sp.
Anomalina mawsoni
? Haplophragmoides sp.
- 3550-3555 feet - Dark grey carbonaceous sandy shale with foraminifera.
Foraminifera: Anomalina mawsoni
- 3600-3605 feet - Dark grey carbonaceous sandy shale with foraminifera.
Foraminifera: Lenticulina sp.
Spiroplectammina edgelli
Genera indeterminate
- 3650-3655 feet - Dark grey sandy shale with foraminifera crushed and distorted.
Foraminifera: Anomalina mawsoni
- 3700-3705 feet - Dark grey sandy shale and light grey sandstone with a few foraminifera, radiolaria and ostracoda.
Foraminifera: Anomalina mawsoni
Radiolaria: Cenosphaera sp.
Ostracoda: cf. Bythocypris
- 3750-3755 feet - Dark grey carbonaceous sandstone and shale, No microfossils.
- 3800-3805 feet - Light grey sandstone and dark grey carbonaceous shale with a few foraminifera.
Foraminifera: Anomalina mawsoni
Lenticulina spp.
Valvulineria infracretacea
- 3850-3855 feet - Light grey sandstone and dark grey carbonaceous shale. No microfossils.
- 3900-3910 feet - Pale grey sandstone and dark grey carbonaceous shale with foraminifera and radiolaria.
Foraminifera: Anomalina mawsoni
Lenticulina spp.
Valvulineria infracretacea
Radiolaria: Porodiscus sp.
- 3950-3955 feet - Pale grey sandstone and dark grey carbonaceous shale with indeterminate foraminifera.
- 4000-4005 feet - Pale grey sandstone and dark grey carbonaceous shale. No microfossils.
- 4050-4055 feet - Dark grey carbonaceous sandstone with foraminifera.
Foraminifera: Anomalina mawsoni
Valvulineria infracretacea

- 4100-4105 feet - Pale grey sandstone and dark grey carbonaceous shale. No microfossils.
- 4150-4155 feet - Pale grey sandstone and dark grey carbonaceous shale with indeterminate foraminifera and ostracoda.
- 4200-4255 feet - Pale grey sandstone and dark grey carbonaceous shale. No microfossils.
- 4300-4305 feet - Dark grey carbonaceous shale and sandy shale with foraminifera.
- Foraminifera: Anomalina mawsoni
Genera indeterminate
- 4350-4355 feet - Dark grey carbonaceous shale and sandy shale. No microfossils.
- 4400-4405 feet - Dark grey carbonaceous shale and sandy shale with foraminifera rare.
- Foraminifera: Valvulineria infracretacea
- 4450-4455 feet - Dark grey carbonaceous shale and sandy shale with a few foraminifera.
- Foraminifera: Marginulina sp.
Spiroplectammina sp.
Valvulineria infracretacea
- 4500-4505 feet - Dark grey carbonaceous shale and sandy shale with foraminifera rare.
- Foraminifera: Anomalina mawsoni
- 4550-4555 feet - Dark grey carbonaceous shale and sandy shale. No microfossils.
- 4600-4605 feet - Dark grey carbonaceous shale and sandy shale with a few foraminifera.
- Foraminifera: Anomalina mawsoni
cf. Trochammina minuta
- 4650-4755 feet - Dark grey carbonaceous shale and sandy shale with poorly preserved foraminifera.
- 4800-4805 feet - Dark grey carbonaceous shale and sandy shale with foraminifera rare.
- Foraminifera: Valvulineria infracretacea
- 4850-5055 feet - Dark grey carbonaceous shale and sandy shale. No microfossils.
- 5100-5105 feet - Light grey sandy shale and dark grey shale with a few foraminifera.
- Foraminifera: Anomalina mawsoni
cf. Pyrulina
- 5150-5205 feet - Light grey sandy shale and dark grey shale. No microfossils.
- 5250-5255 feet - Grey carbonaceous sandy shale with indeterminate foraminifera.

5300-5355 feet - Grey carbonaceous shale and sandy shale. No microfossils.

5400-5455 feet - Grey and dark grey carbonaceous shale with indeterminate shell fragments.

5500-5505 feet - Grey and dark grey carbonaceous shale with a few foraminifera.

Foraminifera: Anomalina mawsoni
Marginulina sp.
Vaginulina sp.
Valvulineria infracretacea

5550-5555 feet - Grey and dark grey carbonaceous shale with a few foraminifera.

Foraminifera: Haplophragmoides sp.
Verneuilina sp.

5600-5605 feet - Grey and dark grey carbonaceous shale and sandy shale with a few foraminifera.

Foraminifera: Anomalina mawsoni
Genera indeterminate

5650-5655 feet - Grey and dark grey carbonaceous shale and sandy shale with indeterminate foraminifera.

5700-6150 feet - Grey and dark grey carbonaceous shale. No microfossils.

6150-6955 feet - Chiefly dark grey to black carbonaceous shale. No microfossils.

7000-8000 feet - Light and dark grey carbonaceous shale and sandy shale. No microfossils.

NOTES ON THE MICROFOSSILS AND THE AGE OF THE BEDS

The first appearance of microfossils in the cuttings from L.S.D. Cherwell No.1 Well, was a test of the foraminiferal species, Ammodiscus milletianus Chapman described from the Gault (Lower Cretaceous) of England. No other form was found until the depth of 2030-2040 feet. From that depth down to 5,600-5,605 feet an assemblage of foraminifera was present which is characteristic of Lower Cretaceous deposits throughout Australia. A small rotaline, Anomalina mawsoni dominates the assemblage. This form together with Ammobaculites fisheri, A.minimus, Lenticulina australiensis, Marginulinopsis subcretaceus, Marginulina australis, Spiroplectammina edgelli, Trochammina minuta and Valvulineria infracretacea was described by the writer (Crespin, 1953) from deposits in the Great Artesian Basin in Australia. The assemblage in this bore consists chiefly of calcareous species which in the bores in the Great Artesian Basin occurs in a zone immediately above a zone rich in arenaceous forms.

A notable feature of all tests of the foraminifera as well as the ostracoda and fish tooth is the mode of preservation. All tests are stained brown, chiefly dark brown. This is most probably due to the high carbonaceous content of the rocks in which they are found. At times replacement by pyrite of all chambers can be seen through the dark brown staining, thus revealing perfect structure of the test. Many of the foraminiferal tests are crushed or distorted, a feature

characteristic of Lower Cretaceous deposits throughout the world.

Radiolaria were present in many samples. They are frequently associated with foraminifera in the Lower Cretaceous deposits of the Great Artesian Basin.

The first appearance in the bore of a single specimen of foraminifera at 1,900-1,905 feet, the sudden disappearance of all microfossils at 5,600-5,605 feet, the small number of species present in the respective samples and the uniformity of species throughout seem to suggest that there has been little contamination of species during drilling.

The calcareous genera Anomalina, Gyroidina and Valvulineria are not known in beds older than the Lower Cretaceous and there seems little doubt that the beds in the bore down to the depth of 5,605 feet at least are of Lower Cretaceous age. The similarity of lithology down to the last sample examined at 8,000 feet suggests that the bore was still in the Lower Cretaceous at that depth.

REFERENCE

- Crespin, I., 1953 - Lower Cretaceous Foraminifera from the Great Artesian Basin, Australia. Contr. Cush.Edn.Foram.Res. 4 (1), 26-36.