COMMONWEALTH OF AUSTRALIA

DEPARTMENT OF NATIONAL DEVELOPMENT

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

MICROPALAEONTOLOGICAL EXAMINATION OF SAMPLES FROM BORES IN THE PERTH BASIN, WESTERN AUSTRALIA.

Records 1956/110

by

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MICROPALAEONTOLOGICAL EXAMINATION OF SAMPLES FROM BORES IN THE PERTH BASIN, WESTERN AUSTRALIA.

Samples from several bores in the Perth Basin were forwarded for examination by West Australian Petroleum Pty. Ltd. W. J. Parr (1938) described and figured foraminiferal species from King's Park Nos. 1 and 2 Bores and P. J. Coleman (1952) investigated the distribution of foraminifera in several bores in the Basin. I. Crespin (1937a, 1937b), examined and reported upon samples from the Leederville Valley and Claremont Asylum Bores. (See Crespin, 1956, pp. 66, 67).

In the present examination, only Eocene foraminifera have been recorded, except for one sample from the Pleistocene-Recent Coastal limestone; many samples do not contain micro-fossils. One sample listed by the Company, that from 500 feet in the Guildford Bore, was not received.

Results of the examination are as follows:-

MELVILLE BORE

300 feet. Grey glauconitic calcareous sandstone, with foraminifera, ostracoda, bryozoa and echinoid spines.

Foraminifera:-
- Cibicides umbonifer Parr
- Gyroidinoides soldanii (d'Orbigny) var. octocamerata (Cushman and Hanna)
- Lagena perthensis Parr
- Dentalina cf. colei (Cushman and Dusenbury)
- Guttulina irregularis (d'Orbigny)
- Cyclammina sp.
- Triloculina sp.

400 feet. Grey glauconitic sandy calcareous siltstone, with foraminifera, ostracoda, bryozoa and mollusca.

Foraminifera:-
- Cibicides umbonifer
- Gyroidinoides soldanii var. octocamerata
- Triloculina sp.
- Globigerina sp.

500 feet. Grey glauconitic sandy calcareous siltstone, with foraminifera and ostracoda.

Foraminifera:-
- Epistomina sp.
- Robulus sp.
- Dentalina sp.

600 feet. Grey glauconitic sandy calcareous siltstone, with foraminifera, ostracoda and echinoid spines.

Foraminifera:-
- Cibicides umbonifer
- Alabamina obtusa (Burrows and Holland) var. westraliensis Parr.
- Gyroidinoides soldanii var. octocamerata.
- Cibicides pseudoconvexus Parr.
- Robulus sp.
- Globorotalia sp.

700 feet. Grey glauconitic sandy calcareous siltstone, with foraminifera, ostracoda, bryozoa and radiolaria.

Foraminifera:- Cibicides umbonifer
Discorbis assulatus Cushman

800 feet. Grey glauconitic sandy calcareous siltstone, with foraminifera, ostracoda, bryozoa and radiolaria.

Foraminifera:- Cibicides umbonifer
Buliminella westraliensis Parr.
Gyroidinoides soldanii
Pseudoglandulina clarkei Parr.
Robulus sp.
Dentalina sp.

900 feet. Grey glauconitic calcareous siltstone, with foraminifera, bryozoa, radiolaria and mollusca.

Foraminifera:- Cibicides umbonifer
Buliminella westraliensis Parr.
Discorbis assulatus
Gyroidinoides soldanii var. octocamerata
Lagena sp.

1000 feet. Grey glauconitic sandy calcareous siltstone, with foraminifera, ostracoda, mollusca and radiolaria.

Foraminifera:- Cibicides umbonifer
Gyroidinoides soldanii var. octocamerata
Anomalina perthensis Parr.
Guttulina irregularis

1100 feet. Grey glauconitic calcareous siltstone, with foraminifera, ostracoda and radiolaria.

Foraminifera:- Cibicides umbonifer
Anomalina perthensis
Alabamina obtusa var. westraliensis
Cibicides pseudoconvexus

1300 feet. Dark grey slightly glauconitic sandy calcareous siltstone, with abundant pyrite.

Foraminifera:- Cibicides umbonifer
Anomalina perthensis
Buliminella westraliensis
Gyroidinoides soldanii var. octocamerata
Globorotalia chapmani Parr.
Bulimina sp.

1340 feet. Grey glauconitic sandy calcareous siltstone, with foraminifera and radiolaria.

Foraminifera:- Cibicides umbonifer
Anomalina perthensis

1350 feet. Grey glauconitic sandy calcareous siltstone, with foraminifera and radiolaria.

Foraminifera:- Cibicides umbonifer
C. pseudoconvexus
Lagena terrilli Parr.
Dentalina sp.

The foraminiferal species given above were recorded by Parr from the King's Park bores; the beds are Upper Eocene in age.

ROTTNEST ISLAND BORE

1285-1402 feet. Grey glauconitic calcareous silty sandstone.

Foraminifera:- Cibicides umbonifer
Cassidulina sp.
Globigerina sp.

1480-1541 feet. Grey glauconitic calcareous sandy siltstone.

Foraminifera:- Cibicides umbonifer
Anomalina perthensis
Cassidulina sp.

2023-2185 feet. Grey slightly glauconitic calcareous sandy siltstone.

Foraminifera:- Cibicides umbonifer
Globorotalia chapmani

These three samples are of Upper Eocene age.

2458-2522 feet. Micaceous and ?pyritic sandstone. Unfossiliferous.

2522-2582 feet. Grey, slightly calcareous silty and micaceous sandstone. Unfossiliferous.

The age of these two samples is not known; they may be from the Leederville Sandstone, which has been regarded as Lower Cretaceous in age. (Fairbridge, 1953).

LEEDERVILLE VALLEY (REDAN STREET) BORE.

95-558 feet. Grey glauconitic siltstone, with foraminifera, ostracoda, bryozoa, mollusca and sponge spicules.

Foraminifera:- Cibicides umbonifer
Anomalina perthensis
Alabamina obtusa var. westraliensis
Ceratobulimina westraliensis Parr.
Gyroidinoides soldanii var. octocamerata.
Globigerina mexicana Cushman
Pseudoglandulina clarkei
Vaginulina sp.
Angulogerina subangularis Parr
Globorotalia sp.

620-622 feet. Grey glauconitic slightly calcareous silty sandstone, with very rare, small foraminifera and radiolaria.

Foraminifera:- Cibicides umbonifer

These two samples are of Upper Eocene age.

665-702 feet. Glauconitic sandy siltstone. Unfossiliferous.

705-760 feet. Sandy siltstone with pyrite. Unfossiliferous.

1550-1600 feet. Sandy siltstone. Unfossiliferous.

1650-1744 feet. Sandy slightly glauconitic siltstone, with very rare, indeterminate arenaceous foraminifera.

These four samples may be of Lower Cretaceous age. Lower Cretaceous foraminifera (mainly Lagenidae) have previously been recorded in this bore from the depth of 1650 feet to 1744 feet (Crespin, 1937a and Parr, 1938).

LEEDERVILLE RECREATION GROUND BORE

149¾ feet. Grey glauconitic sandy limestone, with foraminifera, bryozoa and ostracoda.

Foraminifera:- Cibicides umbonifer
Anomalina perthensis
Alabamina obtusa var. westraliensis
Angulogerina cf. subangularis

162 feet. Grey glauconitic sandy limestone, with foraminifera, bryozoa, ostracoda, mollusca.

Foraminifera:- Cibicides umbonifer
Anomalina perthensis
Heronallenia pusilla Parr.
Alabamina obtusa var. westraliensis
Guttulina irregularis
Cibicides pseudoconvexus
Gyroidinoides soldanii var. octocamerata

673 feet. Grey glauconitic sandy calcareous siltstone, with foraminifera, radiolaria, ostracoda and bryozoa.

Foraminifera:- Cibicides umbonifer
Gyroidinoides soldanii var. octocamerata
Anomalina perthensis
Angulogerina subangularis
Globigerina sp.
Bulimina sp.

897½ feet. Grey glauconitic sandy siltstone, with foraminifera, radiolaria, bryozoa and ostracoda.

Foraminifera:- Cibicides umbonifer
C. pseudoconvexus
Guttulina irregularis
Alabamina obtusa var. westraliensis
Gyroidinoides soldanii var. octocamerata
Lagena terrilli

909 feet. Grey slightly glauconitic sandy calcareous siltstone with foraminifera, bryozoa, ostracoda, radiolaria and mollusca.

Foraminifera:- Cibicides umbonifer
Guttulina irregularis
Cyclammina incisa (Stache)
Gyroidinoides soldanii var. octocamerata

Nodosaria radicula (Linne)
Vaginulina sp.
Flabellinella sp.

1023½ feet. Glauconitic silty sandstone with pyrite. Unfossiliferous.

The first five samples from this bore are of Upper Eocene age. The age of the sample from 1023½ feet is not known; it is possibly from the Leederville Sandstone.

KING'S PARK NO. 2 BORE

370 feet. Grey glauconitic, sandy calcareous siltstone, with foraminifera, radiolaria, bryozoa, ostracoda and mollusca.

Foraminifera:- Cibicides umbonifer
Ceratobulimina westraliensis
Guttulina irregularis
Cyclammina incisa
Alabamina obtusa var. westraliensis
Anomalina perthensis
Lagena terrilli
Gyroidinoides soldanii var. octocamerata
Cibicides pseudoconvexus
? Bathysiphon sp.

710-720 feet. Grey glauconitic sandy calcareous siltstone, with foraminifera, ostracoda, radiolaria and bryozoa.

Foraminifera:- Cibicides umbonifer
Alabamina obtusa var. westraliensis
Cyclammina incisa
Ceratobulimina westraliensis
Buliminella westraliensis
Gyroidinoides soldanii var. octocamerata
Anomalina perthensis
Lagena terrilli
L. perthensis Parr
Guttulina irregularis
Globorotalia chapmani
Angulogerina sp.

The two samples from this bore are Upper Eocene in age.

KING EDWARD STREET (OSBORNE PARK) BORE

120-180 feet. Glauconitic calcareous sandstone, with rare foraminifera.

Foraminifera:- Elphidium cf. macellum (Fichtelland Moll)
E. sp.
Rotorbinella sp.
Discorbis sp.
Miliolids.

This is a sample of the Pleistocene-Recent "coastal limestone".

494-500 feet. Grey sandy siltstone. Unfossiliferous. The age of this sample is not known.

CLAREMONT ASYLUM BORE

708-1848 feet (non-calcareous sample). Glauconitic sandy siltstone, with foraminifera, radiolaria and bryozoa.

Foraminifera:- Cibicides umbonifer
Cibides pseudoconvexus
Gyroidinoides soldanii var. octocamerata
Globorotalia sp.
Bulimina sp.

708-1848 feet (calcareous sample). Glauconitic sandy limestone, with foraminifera and radiolaria.

Foraminifera:- Cibicides umbonifer
C.pseudoconvexus
Alabamina obtusa var. westralienšis
Heronallenia pusilla
Pseudoglandulina clarkei
Gyroidinoides soldanii var. octocamerata

These two samples are of Upper Eocene age.

SUBIACO BORE

358 feet. Dark grey sandy very glauconitic siltstone, with rare arenaceous foraminifera.

Foraminifera:- ?Bathysiphon sp.

This sample is probably of Upper Eocene age, Parr (1938) recorded Bathysiphon sp. from the King's Park Bores.

Samples from other bores forwarded by West Australian Petroleum Pty. Ltd. are unfossiliferous, and no age can be suggested for the beds from which they were taken. These samples are:-

West Guildford Bore:- 300 feet and 1400 feet.

Belmont Bore:- 950 feet and 1128 feet.

Hampton Road Bore, Fremantle:- 398 feet-430 feet; 918 feet 10 inches- 920 feet 6 inches; 1067 feet - 1096 feet.

Langley Park Bore:- 966 feet - 975 feet.

Hector Street Bore:- 136 feet - 153 feet.

South Perth Bore:- 1709 feet.

Roberts Street Bore (Osborne Park):- 538 feet - 550 feet.

REFERENCES.

COLEMAN, P.J. 1952. Foraminiferal investigations in the Perth Basin, Western Australia. J.Roy.Soc.W.Aust.Vol.XXXVI, pp. 31-43.

CRESPIN, I. 1937a. Report on samples from the Leederville Valley Bore, Perth, Western Australia. Departmental Rep. (Unpublished).

CRESPIN, I. 1937b. Report on samples from Claremont Asylum Bore, Perth, Western Australia. Departmental Rep. (unpublished).

CRESPIN, I. 1956. Micropalaeontological Investigations in the Bureau of Mineral Resources, Geology and Geophysics, 1927-52. Bur.Min.Resour.Aust. Rep.20.

FAIRBRIDGE, Rhodes W. 1953. Australian Stratigraphy (2nd Edition). Univ.W.Aust.Press.

PARR, Walter J. 1938. Upper Eocene Foraminifera from deep borings in King's Park, Perth, Western Australia. J.Roy.Soc.W.Aust. Vol. XXIV. pp. 69 - 100.