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*Microscopic examination of core samples from No. 2 bore,
Government House Grounds, Perth, Western Australia*

by
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MINERAL RESOURCES SURVEY

MICROSCOPIC EXAMINATION OF CORE SAMPLES FROM NO.2 BORE.
GOVERNMENT HOUSE GROUNDS, PERTH, WESTERN AUSTRALIA.

(Report No.1945/12).

Core samples from No.2 Bore, Government House Grounds, Perth, were submitted by the Geological Survey of Western Australia for microscopic examination to determine if a micro-fauna existed in the sediments. Micro-fossils have been found and the assemblage is considered to be of Upper Eocene age. This age was originally suggested for this microfaunal horizon in my Departmental reports to the Geological Survey of Western Australia in 1937, on five bores in the vicinity of Perth, namely the East Perth Tramways Bore, Zoological Gardens Bore, Claremont No.1 Bore, Claremont Asylum Bore and No.2 Bore, Leederville Valley. Later in 1937, W.J.Parr in his paper on the foraminifera in the King's Park bores, Perth, confirmed the age as Upper Eocene.

In the bore under consideration, core samples received for examination were from the depths of 47 feet 6 inches, 54 to 55 feet, 66 feet and 102 feet. The lithology of the samples is mudstone at 47 feet 6 inches and at 55 feet and micaceous, carbonaceous shale at 66 feet and at 102 feet. The fossils found included small, rather poorly preserved foraminifera, minute sponge spicules, spatangoid spines, bryozoa, small mollusca and ostracoda. An interesting feature of the foraminiferal assemblage is the small number of species present, which are referable to those recorded from bores examined previously and to those described by Parr (1937). At the same time the sediments contained a higher proportion of carbonaceous material than those in the bores earlier examined.

A detailed description of the core samples is given below:

47 feet 6 inches - Grey mudstone with some ironstaining. No fossils present in washings.

54-55 feet - Grey to brown mudstone. Washings contained particles of dark grey and ironstained mudstone, a few quartz grains and a few small foraminifera (Triloculina cf. circularis, Saracenaria sp. and broken tests of genera indeterminate).

66 feet - Dark, grey, micaceous and carbonaceous shale. Washings consisted chiefly of fragments of shale, with a few quartz grains, foraminifera, minute sponge spicules and bryozoa.

FORAMINIFERA: Lagena globosa, Globigerina triloculinoides, Sphaeroidina bulloides, Cibicides umbonifera, C. cf. perlucida.

BRYOZOA - Hornera frondiculata var. aperta.

76 feet - Dark grey, micaceous and carbonaceous shale with layer of fawnish coloured shale. Washings consisted of particles of dark grey and fawn coloured shale, foraminifera fairly common, and spatangoid spines.

FORAMINIFERA: Spiroloculina cf. grateloupi, Lagena hexagona, L. aspera, Cibicides sp. nov., Eponides sp. aff. carolinensis, Eponides spp., cf. Eponides, Discorbis cf. alveata, cf. Discorbis, Elphidium cf. texana, E. sp.

102 feet - Dark grey, micaceous and carbonaceous shale with a greenish tinge and with a few poorly preserved molluscan shells. Washings consisted chiefly of fragments of shale with fine quartz grains, foraminifera rare, bryozoa, mollusca and ostracoda.

FORAMINIFERA: Cibicides cf. perlucida.

BRYOZOA: Cellaria sp.

MOLLUSCA: Clausinella sp., Cyllichnella sp., Eatea sp.

OSTRACODA: cf. Cytheromorpha.

Attached is a chart showing diagrammatic sections of bores that have been examined in the vicinity of Perth. These are given to illustrate the varying thickness of the beds which contain a microfauna of Upper Eocene age. The upper limit indicated is that of the first sample examined microscopically, and the lower limit the last sample. As regards the East Perth Tramways Bore, no microfossils were found in the samples, consequently the division into Tertiary and Cretaceous is based entirely on lithological evidence. The sample at 650 feet is a glauconitic sandstone which is characteristic of the Cretaceous. The break, therefore is placed at a depth somewhere between 650 feet and 487 feet.

This microfaunal horizon in the Upper Eocene is so persistent in fossils content and lithology, that it should have a distinctive name as a unit in the stratigraphic sequence. A suggestion is "Perth Shale". It would be of interest to know if this deposit outcrops anywhere around Perth, so that a type section could be designated. If not, the subsurface section in the Zoological Gardens Bore, South Perth, could be used. In that bore, a microfauna referred to the Upper Eocene is represented from 217 feet (first sample to be examined) down to 1632 feet and a Cretaceous one, probably Lower Cretaceous, from 1680 feet down to 1831 feet. In the bores examined varying thicknesses of the horizon are present, and it is only in the Claremont No.1 Bore and the Claremont Asylum Bore that the upper limit can be determined. In the former the overlying bed is considered to be Pleistocene and in the latter probably Miocene.

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CANBERRA.

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