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U.R. 1961/93

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REPORT ON MICROPALAEONTOLOGICAL  
EXAMINATION OF DEEP BORES AT  
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AT WARRANBOOL.

Examination was made on samples from Mines Department underground water bores in the vicinity of Warranbool in order to ascertain the depositional history of the basal Tertiary and Cretaceous sediments of the area. Results are based mainly on the distribution of Foraminifera. The two bores examined were Wangoom No.2 and Wangoom No.6.

Wangoom No.6.

Biostratigraphy:-

- 2,500 feet to 2,600 feet:- Paleocene Foraminifera similar to those of the Pebble Point Beds which are exposed east of Port Campbell.
- 2,600 feet to 2,900 feet:- No Foraminifera were found.
- 2,900 feet to 3,100 feet:- Upper Cretaceous Foraminifera- Haplophragmoides sp.B. This fauna is typical of Faunule 5 of the Upper Cretaceous Marine Sequence.
- 3,100 feet to 3,300 feet:- Fauna typical of Faunule 4 of the Upper Cretaceous sequence. Foraminifera include Margulina inaequalis, Marginulinopsis curvispta, Marsoneilia oxycona, Cibicides californica, Melundina supracretacea, and Dorothia filiformis, but species of Haplophragmoides and Ammobaculites are the most abundant.
- 3,300 feet to bottom hole. Lower Cretaceous to Jurassic "Otway Group" sediments. No Foraminifera or other marine fauna found.

Palaeoecology:- Working up the sequence from the bottom of well the environmental events are:-

- (1) The non-marine deposition of the "Otway Group" sediments.
- (2) A suspected depositional break at the top of the "Otway Group" at 3,300 feet.
- (3) Deposition of Upper Cretaceous marine siltstones. The bottom conditions were restricted, probably water circulation was inhibited. This is shown by the predominance of arenaceous Foraminifera in Faunule 4 which has a high percentage of calcareous Foraminifera in the Port Campbell region.
- (4) Deltaic conditions from 3,100 feet to 2,900 feet - probably brackish water as Haplophragmoides are present.
- (5) Non-marine interval from 2,900 feet to 2,600 feet.
- (6) The Transgression of the Paleocene seas at 2,600 feet.

Wangoom No.2.

Biostratigraphy:-

- 2,500 feet to 2,600 feet:- Paleocene Foraminifera.
- 2600 feet to 3,100 feet:- No Foraminifera found, though one indeterminate Ammonite fragment was reported 3016 feet.
- 3,100 feet to bottom hole:- "Otway Group" sediments. No Foraminifera or other marine fauna found.

Palaeoecology:- Environmental events are:-

- (1) Non-marine deposition of the "Otway Group" sediments.
- (2) Suspected depositional break at 3,100 feet at top of "Otway Group".
- (3) Paralic sedimentation, with some marine incursions.
- (4) The transgression of the Paleocene seas at 2,600 feet.

Conclusions:-

- (1) Both deep bores at Warranbool were drilled on a "Mesozoic"

High".

(2) This "High" was present before the deposition of the marine Upper Cretaceous sediments as these sediments are 500 feet thick in Wangoom No.6 compared with 2,500 to 3,000 feet in the Port Campbell area. Also no open marine conditions during the Upper Cretaceous are evident in the Warnambool area, suggesting that there was only a shallow embayment.

(3) Although Wangoom 2 is less than 2 miles from Wangoom 5, it is evident that the former is closer to the Upper Cretaceous shore-line. A fault between the two wells maybe present and may have influenced Cretaceous sedimentation, however this fault had no affected Paleocene sedimentation which is at the same horizon in both bores.

(4) The "Mesozoic High" may be influencing the water quality in the Warnambool area, where the water is poor. Good water is recorded both east ( Peterborough, Port Campbell and west (Port Fairy, Portland) of Warnambool where the Cretaceous is deeper and the marine Cretaceous thicker.

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6-9-62.