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ABSENCE OF UPPER CRETACEOUS SEDIMENTS FROM
HOLLANDS LANDING BORE (BENGWORDEN SOUTH 1),
GIPPSLAND

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J. Barry Hocking

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INTRODUCTION

Webb (1961) quoted a report by former Mines Department micronepalaeontologist Mr. D.J. Taylor in which marine Cretaceous was recorded in Hollands Landing bore, Gippsland (correct name: Bengworden South 1).

Taylor's report, now filed in the Geological Survey's unpublished report system (Taylor, 1969), is based on the discovery of two foraminiferal specimens from a bottom-hole sample, at 4,004 feet. The two specimens, of "Praeglobotruncana deliqua", were taken to indicate an upper Albian (i.e. uppermost Lower Cretaceous) age, as well as marine conditions. Traill (1968) has since pointed out that "although formerly ascribed to the Upper Albian, the two specimens have now been determined as being Hedbergella trocoidea of Santonian age, indicating at least some Upper Cretaceous influence in this inland area (pers. comm.)". This reassessment of Taylor was based on his Western Victorian marine Cretaceous studies (Taylor, 1964).

CONTRARY EVIDENCE

Despite the information given above, the writer has assembled evidence that contradicts it:

1. Lithostratigraphy

The writer has carefully logged the basal cores of the Hollands Landing bore, as well as those of Wellington Park 1 and Boole Poole 1 (sometimes known as Sperm Whale Head bore), and has presented a somewhat diagrammatic correlation in Fig.1.

On the basis of the logged cores, and also the driller's log, the top of the Strzelecki Group in Hollands Landing bore is taken to be 3,925 feet, that is, approximately 80 feet above the 4,004 ft. sample in question. Below 3,925 ft. the samples consist of medium light grey mudstone/shale and very light grey to light greenish grey, very fine-grained muddy arkosic sandstone. A thin-section of a sandy sediment from 3,975 feet is briefly described in ^{the} Appendix.

Above 3,925 feet the cores are of typical Latrobe Valley Coal Measures type, and are specifically assigned to Unit A of Hocking (1965). W.K. Harris (pers. comm.) regards these sediments as of Eocene age.

2. Palynology

The first author to publicly oppose Taylor's finding was Dettmann (1963) who stated that "a well-preserved microflora referable to the Speciosus Assemblage was identified in this horizon [actually at 3,977 ft., not 4,004 ft.] from which Cretaceous foraminifera have been reported (Taylor in Webb, 1961). Microplanktonic organisms [which generally indicate marine conditions or influence] have not been observed in the writer's preparations" (p.121). Dettmann concluded that, from the constituent spore species, the age was Valanginian-Aptian (which is Lower Cretaceous).

An independent check by Dr. J.G. Douglas of this Survey supports Dettmann's finding. A shale sample from 3,049 feet contained a Lower Cretaceous microflora belonging to Dettmann's (1963) Speciosus Assemblage and to Douglas' (1969) Zone C.

3. Dip Values

Dip measurements from cores suggest that there may be an angular unconformity between the Strzelecki Group and the overlying Latrobe Valley Coal Measures in the Hollands Landing bore. Dips in the Strzelecki Group are between 18° and 20°, whereas those in the L.V.C.M. are between 5° and 10°. It is believed they represent the regional dip rather than cross-bed foresets.

4. Possible Foram Contamination

The evidence given above, especially under the first two headings, is quite convincing. Why, then, were Upper Cretaceous forams found at 4,004 ft. or, for that matter, why were they found at all in this particular bore?

The writer has worked on foram preparations with D.J. Taylor and is aware that sample contamination is possible. This is especially so when (a) carbon tetrachloride is used for planktonic floats and (b) when sieves are used. Insufficient filtering of the carbon tetrachloride, or incomplete cleaning of the sieves, can result in contamination of the preparation with specimens from earlier preparations. It is relevant to note that Mr. Taylor's main project at the time of his Hollands Landing report was a study of Western Victorian marine Cretaceous forams of which "Praeglobotruncana deliqua" (= Hedbergella trocoidea) is a representative!

CONCLUSION

The lithological and palynological evidence shows that in Hollands Landing bore the Latrobe Valley Coal Measures of probable Eocene age unconformably overlie the Strzelecki Group of Lower Cretaceous age. The unconformity, at a depth of approximately 3,925 feet, is roughly 80 feet higher than the depth at which Upper Cretaceous forams had been reported. It is believed that the latter, represented by a mere two specimens, are laboratory contaminants.

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APPENDIX

A thin-section of a sample from 3,975 feet (V.M.D. Slide No. 9338) showed it to consist of a very sandy mudstone, almost a very muddy ^{very} fine-grained sandstone. The sand consists of quartz, common feldspar (both plagioclase and potash), subordinate biotite and chlorite, and occasional muscovite and apatite. The feldspar is frequently strongly kaolinised. The mud matrix consists of chlorite, ?kaolinite and quartz. There are also traces of carbonaceous material in the rock.

The sample is representative of the Strzelecki Group.

Barry Hocking

20th October 1969

J.B. HOCKING,

Geologist,
Sedimentary Basin Studies
Section.

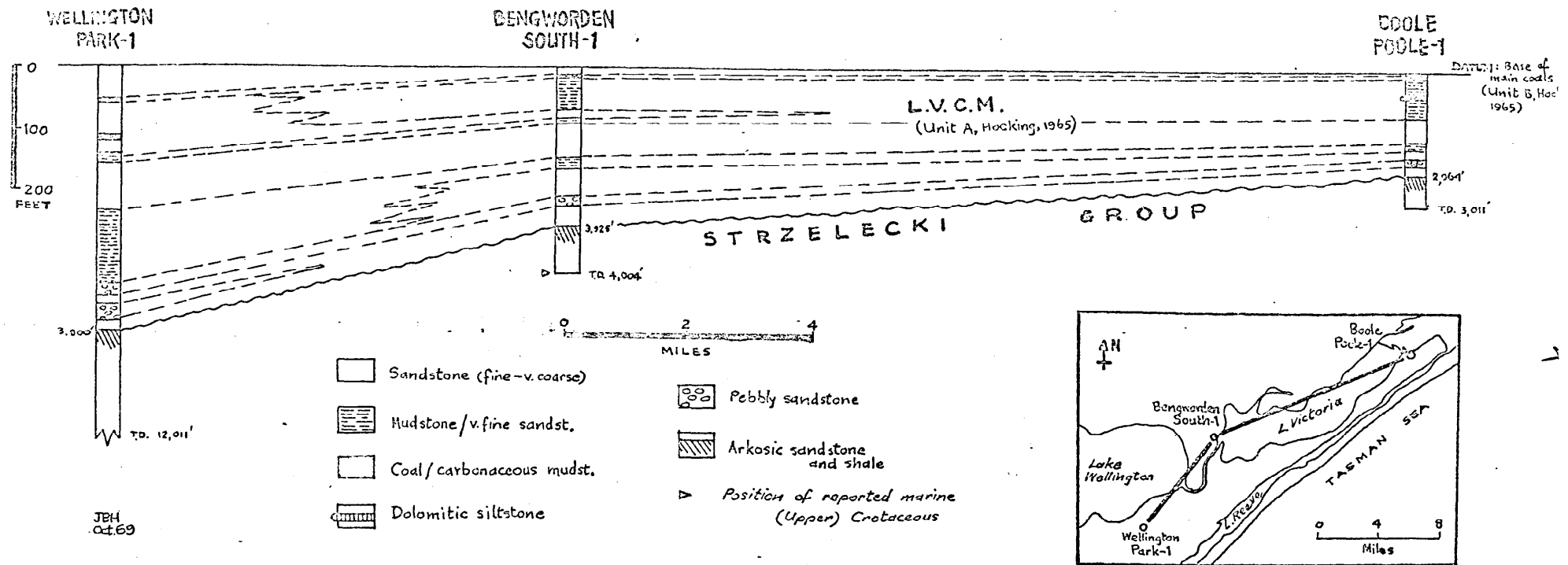


FIG.1 Diagrammatic correlation of basal Tertiary and topmost Mesozoic beds, Gippsland Lakes district