DEPARTMENT OF MINES AND ENERGY
SOUTH AUSTRALIA

REPT.BK.NO. 83/22
PATA LIMESTONE WHALE BONE MATRIX, SUNLANDS, MURRAY BASIN

GEOLOGICAL SURVEY

by

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DME.1417/67
BIOSTRAT.NO. 3/83

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ABSTRACT

The presence of the benthonic foraminifer Heterolepa victoriensis (Chapman, Parr and Collins) in limestone matrix around fossil whale bones from outcrop in the Sunlands area near Waikerie, indicates that the stratigraphic unit is Pata Limestone, of early Middle Miocene age (Bairnsdalian Stage).

INTRODUCTION

Fossiliferous limestone matrix from around fossil whale bones was submitted by Mr. Neville S. Pledge (S.A. Museum) for determination of stratigraphy and age. The only locality information available to him is that the bones were collected at Sunlands, near Waikerie. From Mr. Pledge's personal observation, there are whale bones exposed in the River Murray cliff about 50 m downstream (left bank) from the Sunlands pumping station rising main, and at about the same level as the pumping station platform/car park where Pata Limestone is exposed (Lindsay, 1965). This is still the only locality in which it is known to outcrop. Since the whale bones associated with the present material may be identifiable, it has become important to determine if the matrix is Pata Limestone.

LOCATION

RENMARK 1:250 000 Sheet, SI54-10; Morgan 1:100 000 Sheet, 6829-1; County Albert, Hundred Waikerie, Section 806, probably close to Sunlands pumping station rising main, approximately 7 km northwest of Waikerie.

Lat. 34°8.6'S, Long. 139°55.3'E.

DESCRIPTION OF SAMPLE

SADME Biostratigraphy Section sample F2/83

Brown, fine-grained, fossiliferous limestone; quartzose, sandy, silty, clayey; sparsely glauconitic, somewhat ferruginous. Ditrupa tube fragments are frequent, bryozal fragments rare, and mollusc, echinoid, and decapod crustacean fragments very rare. An external mould reminiscent of Turritella murrayana Tate is present but poorly preserved. Foraminifera are of limited diversity and low abundance, being dominated by Heterolepa victoriensis (frequent). Planktonic forms are very few and small: no members of the Orbulina bioseries were observed. A low-energy, sheltered marine shelf environment of deposition is indicated, with very restricted access to the open ocean.

DISCUSSION

Fortunately, the dominant foraminifer is an important stratigraphic indicator. Heterolepa victoriensis (=Cibicides victoriensis), whose initial appearance is an indicator of the Bairnsdalian Stage of the Victorian Tertiary (Carter, 1964, p.43; Reed, 1965), is in the Murray Basin restricted to and diagnostic of Pata Limestone (Ludbrook, 1961, pp.66,72,87). In the vicinity of the Sunlands pumping station, Pata Limestone, as a characteristically rough-weathering unit, is about 4.3 m thick, 2.4 m of this thickness being above the level of the pumphouse

platform/car park and 1.8 m below. The upper half has abundant Ditrupa and H. victoriensis, with prominent Turritella murrayana; it is likely that sample F2/83, in which these faunal elements are much more sparse, is from the lower part, at or below the level of the platform/car park. In comparison, sample F93/67, of brown limestone collected by the writer from this locality at 5.5 m below the local top of Pata Limestone, has abundant foraminifera but lacks Heterolepa victoriensis. This sample is regarded as from within the uppermost part of Morgan Limestone.

The presence elsewhere of Orbulina and Austrotrillina in Pata Limestone, indicates an age of Zone N.9, early Middle Miocene (McGowran, 1979).

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BIOSTRATIGRAPHY SECTION

REFERENCES

Carter, A.N., 1964. Tertiary foraminifera from Gippsland, Victoria, and their stratigraphical significance. Mem. geol. Surv. Vict., 23.

Lindsay, J.M., 1965. River Murray Drainage Investigation No. 2, stratigraphy and micropalaeontology of bores and surface sections. S. Aust. Dept. Mines report 60/111 (unpublished).

Ludbrook, N.H., 1961. Stratigraphy of the Murray Basin in South Australia. Bull. geol. Surv. S. Aust., 36.

Reed, K.J., 1965. Mid-Tertiary smaller foraminifera from a bore at Heywood, Victoria, Australia. Bull. Am. Paleont., 49(220):39-104.