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1987/21. A Paleocene radiometric age for basalt at Bream Creek, south-eastern Tasmania.

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**Abstract**

A whole-rock K/Ar radiometric age for AOB from Benders Hill, near Bream Creek, is  $58.5 \pm 0.7$  Ma.

**INTRODUCTION**

During late 1986 and early 1987 a large number of small earthquakes was recorded from the Bream Creek area. Speculation was reported in the press that the earthquakes may be associated with either recent or future volcanism. As earthquake effects appeared to be confined to areas underlain by Tertiary basalt (Gulline, 1982) it was decided to obtain a radiometric date to determine the age of basalts in which the effects of earthquakes could be felt.

The area was visited during February 1987 and the three most suitable basalts were sampled for possible dating.

Two of these were from outcrop, and the third, subsequently dated, was from a scree deposit on the Kellevie-Bream Creek Road at EN674634. Although not *in situ*, it was apparent that this was the most suitable material for dating seen on the sampling reconnaissance, and furthermore it was obvious that transport had not been very far.

The dating was carried out by AMDEL, Frewville, South Australia.

**RESULTS**

The dated rock is a porphyritic olivine basalt containing olivine phenocrysts in a groundmass of fine plagioclase laths ( $<0.15$  mm), clinopyroxene and iron oxides.

Standard techniques were used to determine the potassium content in duplicate and for the extraction and isotopic analysis of the argon.

The analyses and calculated age are given below:

%K	Ar* ( $\times 10^{-10}$ moles/g)	$^{40}\text{Ar}^*/^{40}\text{Ar}$ total	Age ( $\times 10^6$ years)
0.895	0.9171	0.878	$58.5 \pm 0.7$
0.884			

\* Denotes radiogenic Ar

Constants used  $^{40}\text{K} = 0.01167$  atom %  
 $\lambda \beta = 4.962 \times 10^{-10} \text{ y}^{-1}$   
 $\lambda \epsilon = 0.581 \times 10^{-10} \text{ y}^{-1}$

## DISCUSSION

The dated sample is the first proven Tasmanian Paleocene basalt and significantly extends the known range of Tertiary volcanism in south-eastern Tasmania (for discussion see Sutherland and Wellman, 1986).

Alkali olivine basalts in the Bream Creek area are probably younger than tholeiites in the region (Everard, *in* Gulline, 1984), so it is possible that volcanism may extend beyond the Tertiary.

The volcanism is probably related to the opening of the Tasman Sea, which was initiated with the separation of Tasmania and New Zealand about 80 million years ago (Cande and Mutter, 1982). It is noteworthy that sea-floor spreading in the Tasman Sea ceased at 57 Ma (Veevers, 1984).

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