time of the igneous activity. Van Bemmelen[7] indicates that these granites are part of an igneous system of batholitic scale. The spread of ages referred to here may be the effect of a long and complicated history of crystallization. The value of the potassium–argon age of the biotite as one defining the boundary between Jurassic and Triassic time may be open to question.

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A Potassium/Argon Dated Pliocene Marsupial Fauna from Victoria, Australia

KNOWLEDGE of the history and evolution of the mammalian fauna of Australia was meagre until the recent work of Stirton *et al.*[1]. They located a sequence of faunas in Central Australia, but precise assessment of the geological ages has been difficult because of the isolation of this area from the established geological section. This communication reports a Pliocene fauna from Victoria which has been dated by the potassium/argon method.

A small assemblage of marsupial teeth was recovered by washing techniques from the '*A*' zone of a fossil soil developed on the Kalimnan Limestone of Pliocene age from the Grange Burn near Hamilton in western Victoria. The locality and stratigraphy are described in detail by Gill[2].

The sample of fresh-appearing basalt from a flow overlying the soil zone was collected 5 ft. above the bottom of the flow in order to minimize the effects of weathering on the more porous basalt near the bottom. The upper part of the flow has been recently removed by stream erosion. The whole-rock sample was dated by the potassium/argon method using a procedure described previously[3], with a result of 4·35 ± 0·1 m.y. (Table 1). The rock is a finely vesicular, alkali olivine basalt belonging to the Newer Volcanics of Victoria[4,5]. It consists of olivine phenocrysts set in a groundmass of plagioclase, clinopyroxene, olivine, iron oxides; about 10 per cent brown isotropic glass occurs interstitially. Although the rock is free of alteration and the glass is not devitrified, some loss of radiogenic argon by continuous diffusion may have occurred. Hence, the date of 4·35 m.y. must be regarded as a reliable minimum age, which, however, is probably close to the true age. This date is Upper Pliocene according to the time-scale of Evernden *et al.*[6] and is in good agreement with the stratigraphic evidence of a Pliocene marine fauna found underlying the basalt.

The contemporaneity of the marsupial fauna and the fossil soil with the overlying basalt is indicated by the presence of carbonized tree stumps and roots in growth position in the upper 2–3 ft. of the fossil soil. Immediately underlying the basalt is a thin layer of highly carbonaceous clay. Apparently the lava flow cremated a standing forest. It is unlikely that the fossils are appreciably older than the flow because it is doubtful that they would have survived the weathering processes in the '*A*' zone of the soil for any length of time.

Table 1

Sample No.	K analyses (wt. %)	$*^{40}Ar/^{40}K$	Atm. ^{40}Ar (%)	Calculated age (m.y.)
GA 1141	0·717, 0·718 } 0·717	$2{\cdot}545 \times 10^{-4}$	33·3	4·35

$\lambda_\beta = 4{\cdot}72 \times 10^{-10}$ yr^{-1}, $\lambda_k = 0{\cdot}584 \times 10^{-10}$ yr^{-1}, $^{40}K = 1{\cdot}19 \times 10^{-2}$ atom per cent.
* ^{40}Ar, radiogenic argon.

The first marsupial material from this locality was an isolated tooth found by Gill and identified as a 'cuscus'[2,7–9]. This was further discussed by Stirton[10]. This specimen is now being re-studied by W. D. L. Ride of the Western Australian Museum.

The material recovered by us consists of teeth and tooth fragments, with a few poorly preserved bone fragments. It was obtained by wet sieving matrix from the top 1 ft. of the fossil soil. Although only a small portion of the sieve concentrates has been examined, 48 teeth or tooth fragments, representing at least eight taxa, have already been found. The following groups are represented by this material: Phascogalinae 1; Macropodinae 2; (?)Macropodinae or Potoroinae 1; Phalangerinae 1 (a form very close to *Trichosurus*); Pseudocheirinae 1 (a form very close to, if not congeneric with, *Pseudocheirus*); Burramyinae 1; (?)Phascolarctinae 1. As yet no teeth representing Peramelidae, Phascolomyidae, Rodentia or Chiroptera have appeared; but it would be premature to place too much significance on this fact with only this limited sample. Most of the specimens are clearly referable to living or Pleistocene genera or families. They are generally smaller and are either less or differently specialized than the later representatives of these groups. There appears to be the potential for a well-rounded fauna from this locality for comparison with the other Australian Tertiary faunas.

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METALLURGY

Effect of Heat Treatment on the Structure of Oriented Nickel Electrodeposits

INVESTIGATIONS on the development of preferred orientations on electrodeposits using electron diffraction techniques[1–4] and examination of texture and topography of electrodeposited metal surfaces[4–8] have been reported in recent years. Little information is available at present, however, regarding the effects of heat treatment of electrodeposited metals, at different temperatures, on changes in the foregoing properties. An electrodeposited metal develops not only preferred orientation but also internal stresses[9–11], their extent depending on deposition conditions. Since annealing removes most of the stresses in a