

Last resting place of a thylacine

SIR — The published photographs^{1,2} of lairs and dens of the thylacine, Tasmanian tiger or Tasmanian wolf (*Thylacinus cynocephalus*) are all associated with unsubstantiated observations and sightings of animals in the wild; the last specimen in captivity died in the Beaumaris Zoo, Hobart in 1936. The nature and purpose of the lairs is unknown: for example, the size of the animal's home range and whether the resting places chosen during the day were casual and transient, or semi-

formed part of the director's report to the 1,127th meeting of the council in 1903: "I visited Tasmania in December, . . . and during that time was enabled to travel round a portion of the coast via Scottsdale, . . . and was enabled to visit many small settlements, such as Pioneer, Derby, Cullenswood, Avoca etc., in country where Tasmanian Wolves and Devils are found. I gave lectures with the aid of my magic lantern at each place and well advertised our Gardens, besides giving two public lectures in Launceston,

so that if any of the animals mentioned are caught in these districts, they will come to our Gardens. I was also enabled to bring back with me a pair of Tas. Devils, 2 Black opossums, besides obtaining a Tas. Wolf"³. While in the Avoca district, Le Souef stayed with family friends, the Franks, at their property Meadstone, on the upper reaches of the St Paul's River. It was here, while Le Souef was visiting, that a thylacine was captured from the lair in the figure, and the station hands involved were paid £7 for their effort³.

The lair itself appears as a shallow cave in the St Paul's River Triassic sandstone, with some nesting material on the floor, much of which appears to be made of fern fronds similar to those of the specimen of *Polystichum proliferum* growing outside the lair. The photograph reflects the most commonly described location for thylacine lairs in the literature, that of their placement within caves, rocky hollows and rocky dens^{4,5}.

Le Souef returned to Melbourne with his thylacine on 24 December 1902 and wrote to Krueger on 1 January 1903, offering him the animals he requested, at the prices he had suggested, including: "one Wolf (Tasmanian) . . . price twenty pounds". This thylacine, captured from its lair and despatched from Melbourne Zoo in 1903, represents the first of several thylacines held in captivity in the Antwerp Zoological Gardens; another was obtained in 1913 from the Beaumaris Zoo in Hobart, and Moeller also notes⁶, in reference to the Royal

Society and Regent's Park Zoo, that "Antwerp . . . received several Tasmanian wolves, via London".

In conclusion, I suggest that the historical records associated with this particular specimen adequately validate its existence. Hence, for the first time, a photograph of the last resting place of a thylacine in the wild has been authenticated.

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The thylacine lair in the Triassic sandstone of the upper reaches of St Paul's River, Tasmania. (Photograph from the La Trobe Collection, State Library of Victoria.)

permanent to permanent, is open to question. It is not clear, therefore, whether the recent photographs^{1,2} are really of thylacine lairs.

My examination of the historical records of the Royal Melbourne Zoological and Acclimatisation Society (RMZAS) has revealed the first unambiguous photograph of a lair from which a thylacine was caught, and although no photograph has been preserved of the specimen, sufficient records of its existence and eventual fate have been found to validate the status of the photograph (see figure).

At the 1,126th meeting of the council of RMZAS in 1902, a letter was read from F. Krueger, director of the Zoological Gardens in Antwerp, who wished to purchase certain Tasmanian animals at a generous price³. The Melbourne Zoo's director, W.H.D. Le Souef, noted "as we have none to spare and they are difficult to procure, I would suggest . . . that I go to Tasmania tomorrow for about a fortnight and visit the various centres where these animals are found, and propose taking my magic lantern with me, so as to interest the people I visit in our Gardens and requirements and we should make a good profit . . . I anticipate the total expenses will be under fifteen pounds". The RMZAS council readily agreed to his proposal³.

Le Souef's activities in Tasmania

Universal cellular tropism?

SIR — Although human immunodeficiency virus-1 (HIV-1) has been demonstrated to infect an ever-increasing array of human cell types, isolation and localization of the virus *in vivo* suggests that cells of the lympho-reticular system are predominantly affected. Understanding the viral-specific determinants, such as the viral envelope, which govern the susceptibility of various lympho-reticular cells to HIV-1 (a process called cellular tropism) and subsequent viral production during the acute and chronic stages of infection is critical to the design of vaccines and immunotherapeutics. Although not ideal, the *in vitro* propagation of various human cells either of primary origin or as immortalized cell lines provides a means to study those structural elements of the viral envelope responsible for tropism.

Various studies have described the molecular determination of cellular tropism of HIV-1 as residing in the viral envelope¹⁻³. More specifically, cellular tropism was mapped by the authors of these studies to the envelope region which was found to include the third hypervariable domain (V3), an epitope known previously to be involved in neutralization, cell fusion, viral infectivity, and both T- and B-cell epitope recognition (reviewed in ref. 4). In these studies, three sources of human cells were used to map the envelope regions responsible for tropism: PHA-stimulated peripheral blood mononuclear cells (PBMCs), which constitute a mixed primary T4 helper cell population; various immortalized human T4 cell lines; and primary macrophages derived from the PBMC pool. Although significant differences in infectivity and replication on the T-cell lines and macrophages were noted with viruses containing chimaeric recombinant envelope, no differences were observed for infectivity and replication kinetics in the PHA-stimulated PBMCs (Table 1 of ref 1; Figs

1. Park, A. *Austr. Geogr.* **1**, 66–83 (1986).
2. Guiler, E. R. *The Tasmanian Tiger in Pictures* (St David's Park, Hobart, 1991).
3. Royal Melbourne Zoological and Acclimatisation Society *Minute Book No. 8. 1893–1903* (Archives of the RMZAS, Public Records Office, Melbourne).
4. Guiler, E. R. *Thylacine: The tragedy of the Tasmanian tiger* (Oxford Univ. Press, Melbourne, 1985).
5. Smith, S. *The Tasmanian Tiger – 1980* (National Parks and Wildlife Service, Hobart, 1981).
6. Moeller, H. F. in *Grzimek's Encyclopedia of Mammals* Vol. 1. (McGraw-Hill, New York, 1990).