A

PRELIMINARY REPORT ON THE STRUCTURE AND PETROGRAPHY OF MOUNT YENGO

Members of the Amateur Geological Society of the Hunter Valley.

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1. Introduction

Mt. Yengo (991483 Mt. Yengo 1:25000 sheet,

some 50 km southwest of Wollombi) with an elevation of 668 m A.S.L. has received scant geological investigation. Standard (1964, 1969), in delineating the extent of the Hawkesbury Sandstone, refers to it as a basaltic capping. Elsewhere, on most geological maps covering the region, it is shown as basalt. The outcrop constitutes a very prominent mass elevated well above the level of the dissected plateau.

Members of the Society have made several visits to the remote Mt. Yengo. Access now is by a private road that is closed by a locked gate about 15 km from Mt. Yengo. The final 8 km. to the base of the igneous body is a difficult four-wheel drive track.

2. Structure

The igneous body is approximately 180 metres thick and is elliptical with a major (roughly E-W) axis of about 1.6 km. It rests on Hawkesbury Sandstone which is silicified and ferruginised near the contact. The contact, however, is obscured by igneous talus and vegetation. There is no sedimentary'cover on top of the igneous mass.

No major layering .is prominent although talus and vegetation might obscure such structures. Mineralogically, from hand specimen examination, there is distinct compositional and textural layering. Near the base a fine-grained selvedge has been observed and, near the top, further fine-grained rock has been found. In between these extremes the upper parts seem to be richer in pyroxene while the lower parts are richer in plagioclase and olivine.

3. Petrography

At this stage, thin-section microscopy has been limited to one specimen from the basal selvedge and one from an intermediate coarser phase. The latter reveals a medium to coarse-grained rock or probably undersaturated alkali basalt magma parentage. The texture is sub-ophitic to intergranular with titanaugite being moulded against zoned basic p!agioclase. Olivine is also zoned with some outer zones altered to brown 'iddingsite' Alkali amphiboles (brown kaersutite) and green aegirine or aegirene-augite are present sparsely. Analcime occurs as primary phenocrysts and less commonly as secondary fillings and alteration products. Some plagioclase shows alteration to analcime.

Some olivine encloses clusters of mostly cubic opaque minerals. The mesostasis constituting about 15% of the whole rock contains finer grained titanaugite, basic plagioclase, altered biotite, olivine and minor zeolite, chlorite and carbonates. Apatite is present throughout the rook but more commonly in the mesostasis, Opaque minerals are prominent and often show cubic outlines.

The basal selvedge shows finer grain size with a greater proportion of olivine and more equal proportions of titanaugite and plagioclase. There is hardly any mesostasis.

In keeping with the terminology of Joplin and Wilkinson for similar rocks in Eastern Australia the name teschenite is advocated.

Mt. Yengo, together with Warrawalong (Boesen & Ritehie, 1971), by a display of undersaturated

alkali magmatic activity, constitute at least a geographic link between the Jurassic analcime dolerite of Prospect (Branagan, 1968) to the south and the Eocene and Palaeoeene tesehenites of Mt. Royal. Range and theralites at Square Top (near Nundle) respectively.

The size of these Igneous bodies suggests an origin related to the tensional movements associated with the opening of the Southern Ocean 58-53 m.y. ago (Sutherland, 1976). Acknowledgements Assistance from the staff, and use of equipment, of the Department of Geology, University of Newcastle, is gratefully acknowledged.

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