

# THE PETROLOGY OF THE FIVE ISLANDS, PORT KEMBLA, NEW SOUTH WALES.

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(Plate vii and Figures 1-2.)

## Introduction.

Petrological notes were supplied to Davis, Day and Waterhouse for use in their paper (1938) on the ecology of the Five Islands. Subsequent work necessitates some modification of the views then expressed.

## Islands I and II.

Harper (1915, p. 303) considered that Islands I, II, III, and V are composed of either the Dapto-Saddleback flow (popularly called dolerite) resting on red tuffs, or entirely of tuffs. Islands I and II, however, consist entirely of Dapto dolerite showing a pronounced rusty red colour on the weathered surface.

From examination of this rock in the Port Kembla Government Quarry, Browne and White (1929) enumerated the following types in descending order: A. Dapto-Saddleback trachybasalt. B. DeutERICALLY altered trachybasalt. C. An intrusion from the same magma crystallizing under different conditions, with no completely unaltered type to be seen. D. A rock usually pinkish in colour and heavily impregnated with carbonates. This is type C in an advanced state of alteration. The first two types are seen on Island II and the whole four occur on Island I. The field relations are the same as in the quarry, though not so well exposed. In the following descriptions all numbers prefixed by DR refer to specimens in the Australian Museum collection, while other numbers denote rocks in the Mining Museum. Textural terms are used according to Johannsen (1931).

## Field Occurrence.

*Type A (DR 4204).* A black rock with a resinous lustre, showing an abundance of glassy felspar and black augite phenocrysts. On a weathered surface these phenocrysts stand out in marked relief. This type constitutes by far the greatest part of rock exposed on Islands I and II.

*Type B (DR 4203).* This is the trachybasalt that has suffered deuteritic alteration. The groundmass is of a dark grey colour and the felspar phenocrysts have lost most of their glassy lustre and are dull greenish white in colour. The augite phenocrysts are unchanged. Exposures of this type are found as scattered masses throughout type A. These exposures are nearly all found below the ten foot contour line and some extend right to sea-level. There is no sharp line of demarcation between them and the surrounding type A. Evidently, as in the quarry, the upward limit of deuteritic alteration is quite irregular. In a small ravine on the north coast of Island II some 10 chains east of the isthmus which joins the two islands, a small dome-shaped mass of type B protrudes up into type A. Judging by the comparative scarcity of outcrops and by the comparatively small extent of each outcrop the deuteritic solutions had almost reached the limit of their activity.

In the centre of the mass forming the isthmus there occurs a light greyish brown rock (DR 4206) lighter in colour than the usual type B. This type is unrepresented