

- The Kimberlana Nete, in exposures near Norseman, is a layered basic intrusion of early PE age, similar to the Great Dyke of Rhodesia. It has been sub-divided into three Complexes: the Cowan Complex, the Bekker C. and the Norcott C. The petrology of the B.C. and the eastern end of C.C. is described in detail and a preliminary account of the western half of the N.C. is given.
- The rocks within the nete are divided into five layers or units, these are from bottom to top, the feldspathic bronzit unit, the lower nete-gabbro unit, the upper nete-gabbro unit, the olivine nete unit ^{and} the ~~upper nete gabbro unit~~ nete dolerite unit. The lowest three units are grouped in the lower layered series and the upper two units in the upper layered series.
 - The rocks of both layered series ^(eluent) typically show cumulate textures and this, together with the layering, suggests that they have developed by the gravity accumulation of crystals on the floor of a magma chamber.

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- The nete is a strongly elongate body of dykelike form and the complexes are arranged in a straight line. In cross section the complexes are "Y"-shaped with individual units shaped like expanded "U"s.
- Unlayered rock types consist of a chilled zone at the margin of the nete and off cross cutting late phases. The petrology of these late phase rocks, which include basaltic-dolerite and granophyric dykelets, and the chilled zone is described.
- The petrological study is supported by twelve chemical analyses which show differentiation trends ~~to~~ of a normal Bowen's reaction series type. Particular attention is paid to the percentages of potassium, titanium and phosphorus which are approximately proportional to the ratio of orthocumulus: adcumulus growth.
- It is suggested that Kimberlana Nete formed from two major magma injections, the first forming the lower layered series and the second forming the ~~the~~ upper layered series. It is possible that the magma may have been modified by minor injections of new material.

close approximation to the *average* composition of the grain including the the exsolution lamellae.

Cu and Ni were analysed by atomic absorption spectroscopy at the Kalgoorlie laboratory of Western Mining Corp. Ltd. Inter-laboratory checks made by Dr. J. Ross indicate that the results are accurate to within ± 15 per cent. Cr was determined by X-ray fluorescence.

The U determinations were carried out at Aldermaston (U.K.) using the method of Gale (1967). Henderson *et al.* (1971) found that the precision of this method was ± 10 per cent in orthocumulates and ± 20 per cent where the U content was very low.

P was analysed colorimetrically by a modification of the 'heteropoly blue'

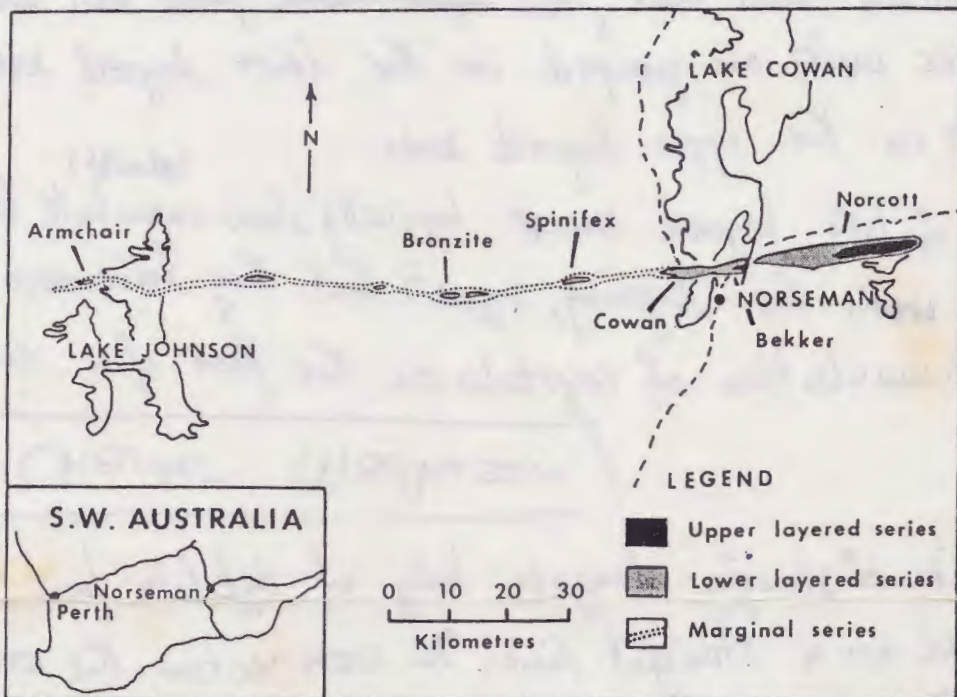


FIG. 2. Location diagram and plan of the Jimberlana Intrusion showing the distribution of the complexes and the arrangement of the layered series.

method (Boltz, 1938, p. 32). Samples were run in batches of twenty-seven which included two standards provided by Henderson (1968). The results agree with Henderson's and have a precision of ± 10 per cent at 100 ppm P.

GENERAL GEOLOGY OF THE JIMBERLANA INTRUSION

The Jimberlana Intrusion is a layered, horizontal, pipe-like body (McClay & Campbell, 1976), similar in many respects to the Great Dyke of Rhodesia (Campbell *et al.*, 1970). It is 180 km in length, 5.5 km thick, up to 2.5 km wide, and is located near Norseman, Western Australia.

The Petrology of the Jimberlana Intrusion, Norseman, Western Australia
 I. H. Campbell
 Nov. 1966
 No. 3937
 260 pages
 93 figs
 4 maps
 J. Petrol. Dep.
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