

THERMAL METAMORPHIC SCHISTS
ADJACENT TO THE WALCHA ROAD ADAMELLITE,
NEW ENGLAND, NEW SOUTH WALES

By

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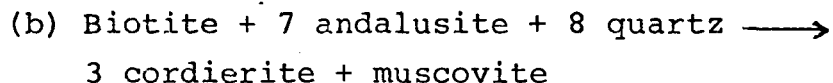
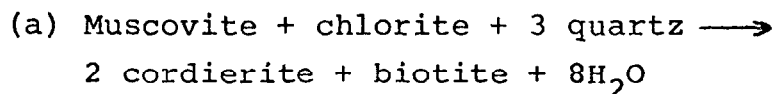
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ABSTRACT

The forceful intrusion of the Walcha Road Adamellite has resulted in the development of a schistose fabric in the intruded sediments. As the contact is approached the regional structure is altered so as to concordantly wrap the Walcha Road Pluton, and at the immediate contact, a "migmatitic" zone is developed. This "migmatitic" zone represents the highest metamorphic grade reached in the Walcha Road aureole, with the development of cordierite-K-feldspar bearing schists and "gneisses". Further from the contact another four distinct metamorphic zones are present. The first indication of aureole conditions is the formation of biotite at approximately 3.0km from the contact, the incoming of biotite representing the commencement of the biotite zone. With increasing metamorphic grade the andalusite zone is entered followed by the cordierite and cordierite-almandine zones. The varying dimensions of the cordierite zone are attributed to the presence of graphitic sediments, the graphite in these sediments lowering PH_2O and allowing the cordierite forming reaction to proceed at a lower temperature.

A thorough geochemical and petrological investigation of the metamorphic zones of the Walcha Road aureole has resulted in the delineation of three metamorphic reactions, namely:



(c) 5 K-feldspar + 2 chlorite \longrightarrow

4 biotite + muscovite + andalusite + 13 quartz + 4H₂O

Using all available data it has been estimated that the aureole of the Walcha Road Adamellite formed at 420°C - 605°C at 1.5 - 2.0Kb.

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