

overlain by the Crimson Creek argillites. The latter consists of a thick, monotonous sequence of mudstones and lithic wackes. Throughout this part of the sequence there is no real evidence to suggest that major volcanism was occurring at the geosynclinal margins.

The Dundas Group consists of about 3800m of mudstone, shale, greywacke, lithic wacke and conglomerate. Fossil evidence in mudstones gives an age of Middle to Upper Cambrian for part of the group.

The Mount Read Volcanics form a broad arcuate mass between the sediments of the Dundas Trough to the west, and the stable Tyennan Nucleus to the east. They are dominantly rhyolitic and dacitic lavas and pyroclastics, with minor andesitic units, and local developments of sedimentary rocks, essentially mudstones. Marine fauna in sediments in the upper part of the succession at Que River indicate a late Middle to early Late Cambrian age (7), which would be the time equivalent of part of the Dundas Group to the west.

The genesis of the Mount Read Volcanics is still not clear, but is certainly related to the development of the Dundas Trough. The mode of formation of the Dundas Trough is still in doubt, and it has been described at various times as a geosyncline, a series of rift valleys, a back arc basin associated with a west dipping subduction zone, and as a collision zone between the two Precambrian nuclei following closure of an oceanic basin by subduction down an east dipping Benioff Zone.

It is suggested here that the Dundas Trough was essentially a geosyncline, as evidenced by the great development of clastic sediments, including turbiditic types, seen in the Success Creek Group and the Crimson Creek argillites. A zone of weakness, probably related to fundamental crustal lineaments, developed at the eastern edge of the geosyncline, with large rift valley type tension faults being developed. These deep seated faults provided suitable conduits for the extrusion of mainly acid lavas and derivatives from deep in the crust. It is suggested that the Mount Read Volcanics are in part contemporaneous with the development of the Dundas Group, with probable