

The contact metamorphic aureole of the South Mountain Batholith in the Bear River-Clements area, Nova Scotia

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Rocks from the Meguma Zone form the substrate of southern Nova Scotia, part of the Scotian Shelf and the Bay of Fundy, south of the Minas Geofracture. The Meguma Zone is composed of the Goldenville Formation, the Halifax Formation, the White Rock Formation, Kentville Formation, and the Torbrook Formation. The White Rock, Kentville, and Torbrook formations are found only on the northwestern side of the South Mountain Batholith, which occupies an area of 7300 square kilometres between Halifax and Yarmouth. In the Bear River-Clements study area these formations are in contact with the Scrag Lake and Ellison Lake monzogranites.

Preliminary age data for the batholith using rubidium-strontium methods yielded an age between 373 and 368 Ma. The use of strontium methods, K-Ar, $^{40}\text{Ar}/^{39}\text{Ar}$, U-Pb, and fission-track dating confirmed that the age of the batholith is ca. 370 Ma. The South Mountain Batholith was mapped by the

Department of Natural Resources from 1985-1989, and distinct phases within it were recognized. Subsequent studies have resulted in a systematic subdivision of the batholith into six main divisions based on petrography and field relations.

Andalusite and cordierite have been observed in the country rock around the batholith in both the Bear River and Clements areas. No sillimanite has been found. Preliminary analysis of multivariate equilibria in hornfels from the Bear River area indicate lower pressures of metamorphism than at any other location around the South Mountain Batholith, possibly as low as 2.5-3 kbars. The depth of intrusion has therefore been determined to be about 6 km along the northwestern margin as opposed to near 10 km along the eastern margins of the batholith. Continuing analysis of hornfels will define more precisely the conditions of contact metamorphism.