Thermal history of the southwestern Meguma Zone, and Hercynian mineralization: an Argon Age Study

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Mafic intrusions at Forbes Point and at the Birchtown quarry yield hornblende 40 Ar-39Ar ages of around 400 Ma, a value which is not significantly different from the time of regional metamorphism, as suggested by our previous study of low-grade slates from the Halifax Formation to the northeast. However, biotites from these same two rocks and also from surrounding schists all appear to be only about 350 Ma old. Intrusion of these mafic bodies essentially contemporaneously with regional metamorphism was perhaps an early precursor to the major event responsible for the intrusion of the South Mountain Batholith about 30 Ma later. The difference in apparent age between hornblendes and biotites most likely reflects the time it took the region to cool from the hornblende closure temperature (about 500°C) to the biotite value (about 300°C).

Late Carboniferous plutonic and hydrothermal activity is documented by 40Ar-39Ar and K-Ar ages on several stocks from the southern coastal region and especially by the 295±3 Ma age obtained for muscovites from the greisese which are associated with the tin mineralization at East Kemptville. This age coincides with a time of intense hydrothermal activity in the Carboniferous basins of Nova Scotia, and is consistent with the age of tin mineralization in Cornwall, England and Panasqueira, Portugal, thus emphasizing the importance and extent of the Hercynian metallogenic epoch throughout the orogen.