

Late Paleozoic Plutonism and related Mineralization in New Brunswick

*L.R. Fyffe and A.A. Ruitenberg - Geological Surveys Branch
New Brunswick Department of Natural Resources*

The Late Paleozoic Plutons of New Brunswick have been classified on the basis of mineralogical and compositional distinctions, the character of metamorphic aureole, textures, internal structure and intrusive relationships of spatially related intrusions. The resulting plutonic types, in approximate sequence of decreasing age, are: A) Mafic plutons, including diorites, gabbros and ultramafic rocks; B) Medium-grained, subporphyritic to porphyritic, biotite ± hornblende granite to granodiorite; 409±20 m.y., 403±20 m.y., 370±30 m.y.; C) Syntectonic tonalite and granodiorite; D) Medium-grained, muscovite-biotite granite; 424±24 m.y.; E) Medium-grained biotite granite with minor muscovite-bearing phases; F) Megacrystic biotite ± hornblende granite 378±7 m.y.; G) Medium-grained biotite + hornblende granite; 406±7 m.y., 383±6 m.y.; H) Coarse-grained biotite granite with minor porphyritic and granophyric phases; 351±8 m.y., 345±8 m.y., 337±15 m.y. The plutons appear to form a continuous sequence of

intrusions from early Devonian to Carboniferous time. The bimodal character of the suite is attributable to mantle-derived basic magma and felsic magma produced by crustal anatexis.

The occurrence of miarolitic cavities, intrusive breccia, and associated volcanics variously attest to the high level of emplacement of Types B, G, and H; whereas the occurrence of sillimanite-bearing contact aureoles and garnetiferous pegmatite with Types C, D, E, and F indicates a deeper level of emplacement for these plutons.

The various plutonic types are associated with characteristic mineral deposits: disseminated Fe, Ni, Cu sulphides with Type A; Cu, Mo-bearing fracture zones, Cu, Mo-bearing skarns, and Zn, Pb, Cu sulphide veins with Type B; Pb, Mo, F-bearing fracture zones with Type F; Mo as rosettes and disseminations with Type G; W, Sn, Mo, F-bearing quartz-greisen veins and Sb, U-bearing veins with Type H.