Possible Avalon Basement in the Miramichi Terrane

L.R. Fyffe, Department of Forests, Mines and Energy
Mineral Resources Branch, P.O. Box 6000
Fredericton, New Brunswick E3B 5H1

The Miramichi Terrane is characterized by the presence of volcanic rocks and associated iron formation of the Ordovician Tetagouche Group. The abundance of felsic volcanic rocks in northern New Brunswick, together with an underlying, thick, quartzose sedimentary sequence implies a Precambrian continental basement to the Miramichi Terrane; the felsic volcanics were presumably generated by partial melting and the quartzose substratum derived by erosion of a sialic protolith. Generally migmatitic rocks of the Trousers Lake Complex in central New Brunswick may represent surface exposures of this basement.

The Trousers Lake Complex forms a sequence of interlayered amphibolite, sillimanite-bearing schist, psammite and granitic gneiss that is quite unlike the greenschist-facies volcanic and sedimentary rocks of the Tetagouche Group. Rocks of the complex can be traced southward from Trousers Lake to the Catamaran Fault, but their eastward extent is not known with certainty. Similar rocks occur south of the Catamaran Fault in the Sisson Brook area where they appear to be in fault contact to the southeast with quartz wacke and phyllite of the Tetagouche Group.

The Miramichi Terrane, lying as it does to the south of the Ordovician Fournier ophiolitic suite of northeastern New Brunswick, can be considered as a continental fragment within the Avalon Composite Terrane. Southward-verging recumbent folding and high grade metamorphism affected the Miramichi Terrane during its collision with the Laurentian craton between the late Ordovician and early Silurian. Subsequent less intense deformation occurred as the Avalon Terrane (proper) collided with the Miramichi Terrane in the Mid-Devonian.