

The Carboniferous Evolution of Nova Scotia¹

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The Carboniferous evolution of Nova Scotia, shaped by its tectonic, palaeogeographic and palaeoclimatic setting in the heart of palaeoequatorial Euramerica, is recorded in its basin fill sequence, fossil record and thermal history. During the Carboniferous, Nova Scotia lay to the east of the orographic barrier imposed by the Appalachian Mountains and north and west of the Mauritanide-Hercynide belt in a broadly intermontane setting that included western Europe. The geological affinity of Nova Scotia for Europe, reflected in elements of the Carboniferous flora and fauna, is mirrored in the evolution of geological thought, with none more influential than Sir Charles Lyell.

The composite Maritimes Basin of eastern Canada, born of the glancing collision of Laurentia and Gondwana in the Devonian, comprises a near complete stratal sequence, as great as 12 km thick, that spans the Upper Devonian through Lower Permian. Across the southern Maritimes Basin, in northern Nova Scotia, deep intermontane depocentres continued to evolve *en echelon* adjacent to transcurrent faults affiliated with a boundary

separating terranes of North American and Gondwanan affinity. These component Carboniferous basins have provided Nova Scotia with its most important source of mineral and energy resources. Their combined basin fill sequence preserves an exceptional record of the Carboniferous terrestrial ecosystems of palaeoequatorial Euramerica, interrupted only by the widespread marine evaporites of the Viséan. The arid palaeoclimate of the late Dinantian grew more seasonally humid in the Silesian and gradually recurred by the Lower Permian, which is evocative of the Rotliegend. During the Silesian, when the Carboniferous basins of Nova Scotia accumulated diachronous, predominantly rheotrophic peats, more continental and seasonal conditions prevailed than in contemporary North American basins to the west. Current researchers strive to trace the record of European and North American marine transgressions of the Silesian to the relatively inland position represented by Nova Scotia. In many respects, Nova Scotia provides instruction to a careful untying of the Gordian Knot of Carboniferous Euramerican geology and palaeontology.

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