

The rocks of the Appalachian and Acadian Regions include sediments, volcanics, and intrusives, chiefly of Palæozoic age. In a few places rocks of Precambrian age are known and along the Bay of Fundy coast are a few areas underlain by Mesozoic rocks. The lowland area of eastern New Brunswick is underlain by little-disturbed Carboniferous beds. Elsewhere, however, throughout the region, the rocks are nearly everywhere thrown into folds with axes trending in a northeast direction and are in addition broken by faults giving rise to a complex structure typical of the Appalachian Region in general. The chief period of deformation in this part of Canada, however, was during the Devonian, whereas to the south, in the United States, the greatest disturbances took place later during the Permian at the close of the Palæozoic.

At Saint John city in southern New Brunswick is exposed a series of early Precambrian rocks made up of limestone, dolomite, quartzite, and gneiss. It is overlain by a thick succession of late Precambrian volcanic rocks upon which rest Cambrian strata. Precambrian rocks also occur in Cape Breton island. In Gaspe peninsula along the north side of Chaleur bay the Macquereau series, composed largely of quartzite, rests unconformably below Ordovician strata and may be Precambrian. Precambrian rocks have been described as occurring in central New Brunswick and in southwestern Quebec. Some of the occurrences are probably, however, of Palæozoic age.

In the mainland of Nova Scotia a thick series of altered sediments, known as the Meguma or Gold-bearing series covers wide areas and is believed to be of late Precambrian age. The lower half of its 35,000 feet thickness consists dominantly of quartzites and the upper half of slates. The series is folded along northeast lines and is broken by northwest faults, the horizontal displacement of some of which exceed a mile. The rocks are intruded by dykes and sills of diabase and by batholithic masses of grey and red granites of Devonian age.

Cambrian formations occur in southeastern Quebec, in southern New Brunswick, and in northeastern Cape Breton. In early Ordovician times sediments were deposited in the St. Lawrence River Region. The Sillery formation of red and green shales with interbedded sandstone has at Quebec a thickness of 2,000 feet. A younger series, called the Lévis, consists of dark shales and thin-bedded limestones with a thickness of possibly as much as 5,000 feet. It forms a band varying in width from 6 to 35 miles; its beds have been folded, faulted, and in places overturned. Mid-Ordovician rocks occur in southwestern Quebec and in Gaspe and northern New Brunswick. Late Ordovician rocks are developed in the Matapedia River and Chaleur Bay districts. At the close of the Ordovician there were extensive mountain-building movements. Masses of peridotite which intrude the Ordovician and older rocks may have originated at this time.

Silurian rocks are exposed in southeastern Quebec, in Gaspe, in New Brunswick, and in Nova Scotia at Arisaig and a few other places. The next marine invasion was in Lower Devonian time when great thicknesses of sediments with interbedded volcanics accumulated in New Brunswick and Gaspe. During the Middle Devonian, a thick series of sandstones accumulated in Gaspe. In the Upper Devonian was deposited in the vicinity of Maguasha, on the Gaspe coast, a group of conglomerates, sandstones, and shales, one member of which is noted for the fossil fish it has yielded. Towards the close of the Middle Devonian, the whole Appalachian and Acadian Regions were affected by mountain-building movements accompanied by the intrusion of batholithic masses of granite.