

the Laurentian granites and gneisses, which latter, though once believed to be *sedimentary*, are now known to be deep-seated eruptive rocks, which pushed up as molten material into the cold rocks above, lifting them as domes and themselves solidifying slowly far below the surface. These great domes of gneiss and granite, known as batholiths, are the commonest structure of the Archaean region.

Though the Laurentian rocks are the lowest, they are not the oldest, as the Keewatin rocks were already cold and solid at the period when they were heaved upward upon the shoulders of the Laurentian. The Keewatin rocks also consist chiefly of eruptive rocks, lava flows and volcanic ash now metamorphosed into greenstones and schists. With them are found in many places thick deposits of ordinary sediments, now changed into gneiss or mica-schist, together with the banded jasper and iron ore of the iron formation.

Much marble or crystalline limestone is also found in the Grenville series of the southern Archaean, which is probably of the same age as the Keewatin. During that period thousands of feet of lava, ashes, mud and sand were laid down on a sea-bottom that has utterly vanished. This was followed by the eruption of the domes of gneiss, lifting the earlier rocks into great mountain ranges, which were afterwards worn down to stumps, disclosing their foundations of granite and gneiss enclosed in a rude network of Keewatin schist.

The next formation, the Huronian, consists of a great sheet of boulder clay or tillite formed by wide-spread glaciers, and masses of water-formed sediments, now slate or quartzite or limestone. In many places the Huronian rocks still lie nearly flat on the worn surfaces of the older rocks, but in others they were caught in mountain-building operations and squeezed and rolled out into schists. The Animikie or Uppermost Huronian is also made up of sediments, very modern in appearance.

The Keweenaw is the concluding formation of the Canadian Archaean, resulting from another outburst of volcanic activity. Thousands of feet of lava, ash rocks, coarse sandstones and conglomerates were piled up on various parts of the old continent. Keweenaw intrusives are considered the source of the ores of silver, nickel and copper mined on a great scale in northern Ontario. Altogether, more than half of the Dominion owes its present configuration to forms shaped in the Archaean rocks though overlaid and sometimes obscured by later activities.

Palaeozoic formations are all well represented in Canada, limestones, shales and sandstones of its various ages (Cambrian, Ordovician, Silurian, Devonian and Carboniferous) contributing to the shaping of the country. These in many places lie almost undisturbed, but in far eastern Canada, where the Palaeozoic ended with the Appalachian mountain-building period, they are crumpled into great folds or torn asunder with profound faults. The Carboniferous of the Atlantic coast is valuable for its important coal-beds.

The Mesozoic in its earlier formations (Triassic, Jurassic) is poorly represented in Canada, but its later formation, the Cretaceous, is of great importance, both for extent and economic features, its crumbling sandstones and shales underlying the prairies of western Canada and containing beds of coal at many places. During the Laramie period, a transition era between the Mesozoic and the Tertiary, were elevated the Rocky mountains, the latest and therefore the highest of the mountain ranges of Canada.

By this time the continent was complete within its main outlines; but during the Tertiary, sediments were deposited in several small western basins, while in southern British Columbia volcanic eruptions covered thousands of square miles