

The Canadian Shield.—Comprising an area of nearly two million square miles, or more than one-half of the whole of Canada, this plateau-like region rises only locally to more than 1,500 or 2,000 feet above sea-level, except in Labrador where altitudes up to 5,000 feet are reached in certain places. Its most characteristic feature is its low relief. Standing anywhere on an elevation an even skyline meets the eye in every direction. Throughout most of the region the hills and ridges rise no more than 100 or 200 feet above the level of the adjacent lakes and valleys. In places, however, as locally along the southern margins of the Shield and in northeastern Quebec along the Labrador border, the relief is considerably more rugged. Though the general relief is low, the region in detail has a very irregular topography consisting of low, hummocky hills and ridges separated by depressions which are commonly occupied by lakes or muskegs. Lakes of all sizes and shapes, and containing numerous islands, dot practically the entire area, in places giving the appearance of a drowned area with only the ridge tops appearing. The rivers as a rule are mere successions of lake expansions connected by stretches in which rapids and waterfalls are numerous.

The rocks of the Shield are mainly of Precambrian age. They form a continental mass which in Precambrian time extended out in all directions beyond the present limits of the Shield. During the succeeding Palæozoic and Mesozoic Eras the Shield was many times at least partly flooded by seas which advanced over it and later retreated. The sediments that accumulated in these seas were largely swept away by later erosion.

From the beginning of the Cambrian period on to the present, the Shield has been a stable mass. During this time it has suffered vertical movements at intervals but it has been unaffected by any folding or mountain-building deformation. Its earlier or Precambrian history, however, was very complex and included periods of volcanism, sedimentation, folding, mountain-building, and igneous intrusion, and also long intervals of quiescence in which erosion was the active process.

Precambrian time can be conveniently divided into two major divisions, the Archæan or early Precambrian and the Proterozoic or late Precambrian. The Archæan in turn falls into two subdivisions, in the earlier of which volcanism took place on a tremendous scale and lavas and tuffs, usually referred to as Keewatin, accumulated over wide areas in thicknesses measured in thousands of feet. With the volcanics are locally associated sediments, in many places altered to mica schists and gneisses. In the Rainy Lake region of western Ontario a thick succession of such sediments, known as the Couchiching series, lies below the Keewatin lavas. In northern Manitoba and Saskatchewan interbedded lavas and sediments of probably similar age are referred to as the Wekusko group. In eastern Ontario and southwestern Quebec a thick series composed of limestone, quartzite, and sedimentary gneiss, known as the Grenville series, is also usually regarded as having been deposited during this first part of the early Precambrian Era. This period was terminated by widespread but gentle folding movements accompanied by some intrusions of granite.

During the second period of the early Precambrian, a thick formation of clastic sediments was deposited. These are commonly referred to in northern Ontario and Quebec as the Timiskaming series. In northern Manitoba and Saskatchewan similar sediments apparently occupying a corresponding stratigraphic position are referred to as the Missi series. Certain series of sediments, such as the Sudbury of the