The Canadian Appalachian Region is the northern continuation of a long belt of fairly low mountains and ridges in the eastern United States. In Canada they extend in a general northeasterly direction through the eastern part of the Eastern Townships of Quebec, the Gaspe region, and all of New Brunswick, Nova Scotia and the Island of Newfoundland excepting several lowland areas which, like Prince Edward Island, are classed as part of the Appalachian Region. The Appalachian Mountains have been in existence much longer than those of the Cordilleran Region and have been worn down to moderate proportions. Their highest point in Canada is Mount Jacques Cartier (4,160 feet) in the Shickshock Range of Gaspe. The highest elevations in New Brunswick, Nova Scotia and the Island of Newfoundland are 2,690, 1,392 and 3,500 feet, respectively.

The Innuitian Region, formerly called the Northern Arctic folded belt, is an area of fairly high mountains up to 300 miles wide stretching for about 800 miles across Ellesmere Island, the Parry Islands and other neighbouring islands. The ranges are from 3,000 to 10,000 feet in elevation.

Geological Processes.—The earth's crust is composed of minerals, the solid form in which the elements and their inorganic compounds exist naturally. Minerals occur in the crust in two main ways—as rock-forming minerals and as mineral deposits. Rocks are fairly large and homogeneous bodies composed of mineral grains. These may be of only one mineral, as in pure sandstone or limestone, but more commonly they comprise grains of two or more minerals, thus accounting for the variegated appearance of granite and many other rocks. Mineral deposits are concentrations of one or more minerals occurring within rocks as veins, irregular masses, or in other ways. Such mineral deposits are common but the minerals may not be valuable; they may be valuable but not in sufficient quantity to be mined economically; or, as in relatively few instances, they may be of economic sizes and contents.

Geological phenomena cannot be understood without an appreciation of the vastness of geological time. Pioneer geologists concluded that the earth existed for many millions of years, basing this on such evidence as the amount of sediments deposited annually in bodies of water (for example, it was estimated that several thousand years would be required to deposit one foot of typical limestone) and equating these estimates with the great thicknesses of sedimentary rocks measurable in various places. This was corroborated by observations that particular fossils are characteristic of particular groups of sedimentary rocks and that the plants and animals of which they are the remains must have evolved very slowly. Recently, more satisfactory methods of dating have been developed, based on the radioactive decay of certain elements such as uranium, which disintegrate into 'daughter' elements at constant rates. Such determinations are only beginning to become available in satisfactory quantities because they require much searching for suitable material, careful sampling and involved laboratory analyses. Most of the results date phenomena that affected rocks after they were formed, rather than the time of origin of the rock sampled. The oldest samples tested have yielded ages of 3,000 to 4,000 million years. Long before such methods were available, geologists agreed to divide geological time into eras and periods, most of which were terminated by unusually strong disturbances in the earth's crust. The eras and periods are listed on the accompanying chart, together with the most recent estimates of the dates of termination of the eras. The 'Precambrian' lasted more than five-sixths of entire geological time, but because of virtual absence of fossils in Precambrian rocks it was not possible to divide Precambrian time with the same assurance as later time, although, as explained above, progress is now being made. Therefore only two Precambrian eras, called the Early Precambrian or Archæan and the Late Precambrian or Proterozoic, are usually recognized; these have not been divided into periods that can be applied from one large area to another, whereas the younger eras and periods have world-wide recognition.

Because of atmospheric conditions the rocks at the earth's surface have from early time been subjected to weathering and erosion of the same kinds as can be seen at work today in the disintegration of rock surfaces, in the cutting action of streams, waves and winds carrying sand particles, in the spalling of rocks by frost action, in the gouging action of glaciers,