

slate, greywacke, cherty iron formation, carbonate rocks, sandstone, shale and locally volcanic rocks. Towards the close of the period, crustal movements took place accompanied locally by the intrusion of granite.

Rocks believed to have been deposited in late Proterozoic or Keweenawan time are found in widely separated areas of the Shield. The Sibley Series and a younger Osler Series, both occurring east of Port Arthur, part at least of the Whitewater beds of the Sudbury Basin, the Athabaska Series of the Lake Athabaska and adjacent regions, and the Coppermine River Series of the Arctic Coast are some of the more important of these groups. They consist dominantly of elastic beds, but include some interbedded lavas. Late Keweenawan time was marked by uplift, the intrusion of the Killarney granite and other igneous rocks and then by long-continued erosion, so that the succeeding oldest Palæozoic rocks rest on a neplaned surface of very low relief.

The Precambrian rocks of the Canadian Shield are the source of a great abundance and variety of mineral deposits. Iron formation is present in the Keewatin and Animikee rocks, the iron ores of the Steep Rock, Helen, Magpie, and Josephine mines in western Ontario being in formations of the former and the extensive deposits along the Quebec-Labrador Boundary in rocks of the latter age; gold, copper, lead, zinc, etc., occur chiefly in the Archæan formations; silver and cobalt are associated with the Nipissing diabase; nickel and copper with a Keweenawan irruptive of the Sudbury area; native copper with the Keweenawan Coppermine River lavas; pitchblende, a uranium-bearing mineral, in rocks as young as the Athabaska Series in northwestern Canada; ilmenite in important quantities is present at Allard Lake and other places in the Province of Quebec in anorthosite intrusive into Archæan rocks and titaniferous magnetites are known at many places.

The Shield was heavily glaciated. Polished, grooved and striated surfaces are seen nearly everywhere, and *roches moutonnées*, with well-marked lee and stoss slopes, clearly indicate the direction of glacial advance. Eskers, kames, beaches, etc., can be recognized in many places on aerial photographs of the country. Erosion and deposition by the ice-sheets were responsible for the disorganization of the drainage and the production of the myriads of lakes.

Appalachian Region.—In the Appalachian Region of Canada are rocks ranging in age from Early Precambrian to Triassic. At Saint John, New Brunswick, fossiliferous Lower Cambrian rocks are underlain by a thick volcanic series, the Coldbrook, regarded as Late Precambrian. This is, in turn, underlain unconformably by the Green Head group, composed of crystalline limestone, quartzite, paragneiss, etc., in many respects resembling the Grenville of the Shield. Although considered to be Archæan, it, nevertheless, carries cryptozoan-like forms which have been described under the name *Archæozoon acadieense*. Rocks somewhat similar to parts of the Green Head occur in most of the upland areas of Cape Breton Island and in Newfoundland.

Besides the Coldbrook group of New Brunswick, other groups believed to be also of Late Precambrian age include the Meguma or Gold-bearing Series of Nova Scotia, rather similar assemblages in the Chaleur Bay region and in southwestern Quebec, and sedimentary and volcanic rocks in the eastern part of Newfoundland.

The Palæozoic rocks, which cover most of the Appalachian Region, range in age from Lower Cambrian to Pennsylvanian. Throughout most of the Region and repeatedly during the Era, deposition appears to have taken place in local basins, rocks of the same age varying widely in both lithology and fossil content. In