

Following the Kenoran orogeny in the Superior province, thick sedimentary beds of Proterozoic age were derived from the erosion of the deformed Archæan rocks in the region north of Lake Huron, and basal conglomerates of the Huronian beds at Elliot Lake contain about one third of the reported uranium reserves of the world. Even younger undeformed beds and diabase sills about 100 miles northeast of Lake Huron form cratonic cover rocks about 2,100,000,000 years old and contain the famous silver-cobalt veins of the Cobalt mining camp. In the same general region, the noritic intrusions near Sudbury were later emplaced during the Hudsonian orogeny to yield the world-renowned nickel-copper-platinum deposits of the Sudbury basin. As a result of these geological processes of many types and of varied Precambrian age, a belt about 150 miles wide extends northeast from Lake Huron and lies to the northwest of the Grenville province. This belt has produced a great proportion of Canada's gold and base-metal production to date.

The Churchill province is exposed as a giant arc underlying northern Manitoba and Saskatchewan, much of the Northwest Territories, the northern tip of Quebec and the Labrador Trough. The rocks of the Churchill province and the much smaller Bear and Southern provinces were folded, metamorphosed to various degrees, and intruded by granitic rocks during the Hudsonian orogeny about 1,700,000,000 years ago. The general rock types of these provinces are similar to those of the Superior province. In the southwestern Churchill province in northern Manitoba, major nickel deposits with lesser copper are being mined from both gneisses and from metamorphosed mafic intrusions which lie adjacent to the boundary of the Superior province. Nickel-copper ore is also mined from contorted gneisses at Lynn Lake, and numerous massive sulphide base-metal deposits in greenstones have been exploited in the Flin Flon district. Farther north, beginning on the north shore of Lake Athabasca at the Beaverlodge uranium camp, a belt of greenstones, sediments and their metamorphosed equivalents extend northeastward to Hudson Bay. Rankin Inlet, near which nickel was formerly mined, lies at the eastern exposed end of this imperfectly known belt. Relatively inaccessible belts such as this, although seemingly favourable for ore deposits, have not been prospected nearly as intensively as similar geological environments in more populated areas. Most of Baffin Island is underlain by contorted rocks of the Churchill province. Of particular interest is the recent discovery and serious evaluation of an exceptionally high-grade iron deposit in northwestern Baffin Island. Of geological interest are intricately folded formations of marble in southern Baffin Island, a rock type generally uncommon in the pre-Grenville portions of the Canadian Shield. A greenstone belt in the Churchill province containing nickel and asbestos occurrences of potential economic interest lies at the northern tip of Quebec and extends easterly from Cape Smith, Hudson Bay. Of major importance is the extension of the Churchill province as the Labrador Trough south from Ungava Bay to its merging and metamorphic involvement with the Grenville province. Rocks of the Labrador Trough adjacent to and east of the older Superior province are not significantly metamorphosed but are converted to schists and gneisses farther to the east. The relatively unmetamorphosed western belt comprises slate, quartzite, dolomite and cherty iron-formation, with mafic volcanics abundant farther to the east. In many parts of the western trough, iron-formation has been closely folded and much of the silica removed. These enriched portions, together with their metamorphosed equivalents which extend into the Grenville province, now provide the bulk of Canada's iron ore production.

A large part of the Shield, extending from Georgian Bay to the Strait of Belle Isle, has long been recognized as forming a distinct segment called the "Grenville". It was named after the Grenville series, characterized by crystalline limestone, impure limy strata, and large areas of sedimentary gneisses in various stages of alteration to granite. The eastern part of the province contains large igneous intrusions of anorthosite. The age relations between Grenville strata and those of the neighbouring Superior province are puzzling. Near Sudbury, as well as at the south end of the Labrador Trough, beds can be traced across the boundary into more metamorphosed rocks of Grenville type. It is believed, therefore, that the distinctive features of the Grenville may be related more to the time and degree of metamorphism than to distinctions in the original age of deposition of