

1.—Topography.

The topography of Canada is the outward or surface expression of geological processes that have been in operation at the surface of the earth and at depth throughout geological time. It is the imprint made by the deposition of sediments, the folding of strata, the intrusion of igneous masses, the ejection of volcanic material, and the dissolving, eroding and transporting of rock matter by agencies acting at the surface. The slow rising and sinking of broad continental areas, the forming of great mountain ranges, and their gradual levelling, are all involved. The present land form is but a momentary expression of a continent that is undergoing eternal change.

The great area in eastern Canada underlain by rocks of Precambrian age is known as the Canadian (or Precambrian) Shield or the Laurentian plateau. It may be regarded as a subdued plateau or perhaps, more strictly speaking, a peneplanated surface that has been rejuvenated by Pleistocene glaciation and uplift. Its average elevation probably does not exceed 1,500 feet, and there are few areas except in the northeast that exceed 2,000 feet. In general the surface slopes gently to the surrounding plain and there are long stretches of the boundary in which there is no marked difference of elevation between the Precambrian Shield and the adjacent Palaeozoic plain; there are other long stretches in which there is an abrupt rise of several hundred feet above the plain or the sea. The greatest known elevations are in the eastern part of Baffin island and along the coast of northern Labrador. In Labrador there are four peaks in the Torngats said to have an elevation of 6,000 feet. The Torngats are carved from the edge of an elevated tableland which is highest towards the Atlantic and sinks towards the west. The coast is one of the boldest and most rugged of the world, with nearly vertical cliffs rising 1,000 to 2,000 feet in height. Though the Canadian Shield is an area of low relief and has a remarkably even sky line, the surface is generally rugged, with successions of rocky hills, 100 to 200 feet high. Occasional exceptions occur in which there is a relief of several hundred feet, as in the hills on the north shores of lake Huron and lake Superior. The area is dotted with lakes, large and small, of irregular outline and with numerous islands. They are rock basins that spill their waters from one to another by short streams with rapids and falls. In an area of 250 square miles in western Ontario that cannot be considered exceptional, aerial surveys have shown that there are 700 lakes. There are well-defined deep trenches like that occupied by lake Timiskaming, related to faulting or other structural features. The Saguenay river flows in a trench that descends to more than 800 feet below sea level, and lake Superior, the largest body of fresh water on the face of the earth, fills a basin in the Canadian Shield that reaches about 400 feet below sea level.

Extending south and west from the Canadian Shield, and limited on the east by the Appalachian mountain system and on the west by the western Cordillera of America, is the great North American plain. The northeastern part of this plain occupies southern Ontario south of a line extending from Georgian bay to the east end of lake Ontario, that part of eastern Ontario lying between the Ottawa and St. Lawrence rivers, and part of Quebec lying adjacent to the St. Lawrence between Montreal and Quebec and extending in a very narrow belt down the river and including Anticosti island. The part of the plain west of the Canadian Shield is of wide extent, and stretches northward to the Arctic ocean between a line on the east approximately joining lake Winnipeg, lake Athabaska, Great Slave lake and Great Bear lake and the foothills of the Rocky mountains on the west.