characteristics of each different surface play their part in modifying today's weather and climate. A few centuries ago the shores of this country seemed to be a cold inhospitable wilderness of forest and rock, but subsequent settlement and development have shown the Canadian climate to be endurable, liveable and even enjoyable. None of the climates has the genial qualities of those in more tropical latitudes; in fact, most of the population lives in a changeable weather zone known to develop some of the more energetic peoples of the world. The forbidding bleakness of the northern lands has acted as a deterrent to economic development and even more to settlement in those regions. However, it may be that in meeting this challenge Canadians, assisted by modern technology, will find the north no more an inhospitable wilderness than the south has proved to be.

Considering the extent of the country and the location of Canada on the globe, great variability in weather and climate might be expected. Stretching through nearly 90 degrees of longitude, the country consists of a sector which extends from within a few hundred miles of the North Pole south to latitude 42 degrees. Bordered by oceans on the east, west and north, and by the Great Lakes as part of the southern boundary, Canada has also an exceedingly long land boundary between it and the United States.

There are many interesting and exceptional facts about the Canadian climates, but they are by no means unique in the world. In general the climates of the southern portion of Canada may be compared to those across the breadth of Europe and Asia. The moderate temperatures and abundant precipitation of the Pacific Coast of British Columbia are somewhat similar to the climates of the coast of Norway; Vancouver weather, for instance, is similar to that near Bergen. However, the protected and sheltered climate of Victoria is more like that experienced in the low countries of Belgium and Holland. Moving eastward, the dry continental-type climates of Canada's Prairie Provinces are roughly comparable to the central regions of European U.S.S.R. For example, the climate of Calgary is not unlike that of an area north of Moscow. Further to the east across the continents and into more humid regions again, a climate similar to that at Ottawa is found at Harbin in Manchuria. Coastal Nova Scotia has its climatic counterpart in the northern Japanese island of Hokkaido. Finally, while the climate of the Canadian Arctic has the same characteristics as that of the U.S.S.R. Arctic, the cold pole of the eastern hemisphere in Siberia has winter temperatures that average much lower than any in Canada.

Climatic Controls

Located in the northern half of the hemisphere, the lands of Canada annually lose more heat to space than they receive from the sun. At the same time low latitude tropical countries are receiving more heat than they lose. To compensate for this, and to maintain a heat balance over all the earth, a general atmospheric air circulation regularly transfers heat poleward. This air movement, known as the "general circulation", undergoes seasonal variations and is broken into latitudinal belts or cells known from equator to pole as the doldrums, the easterly trade winds, the high pressure belt, the prevailing westerlies and the polar easterlies. Most of Canada lies in the zone of the westerlies; the polar easterlies are not well developed in this hemisphere and only occasionally in summer does southeastern Canada come under the direct influence of the Atlantic high pressure cell.

The general movement of air from west to east over Canada in the westerlies zone is not nearly as persistent as the winds in other circulation belts such as the trade wind zone. Migrant low pressure areas move across Canada in the westerlies stream causing the air to blow around them in an anti-clockwise direction while anticyclones or high pressure areas produce a clockwise circulation as they too move from west to east. The movement of these high and low pressure areas is associated with the constant struggle taking place over North America between cold air attempting to surge down from the north and warm air trying to flow up from the south. This inter-action produces low pressure areas while the boundary line between the contrasting air masses is known as a weather "front". Large areas of cloud, precipitation and generally poor weather usually accompany these low pressure areas and fronts.