

Edmonton and a range specialist and a pathologist at Edmonton and Ottawa, respectively. A number of university graduates and undergraduates are engaged annually to assist in summer field work. The Ottawa headquarters includes an administrative staff of about 30 in addition to supervisory research officers. About 25 part-time migratory bird wardens and sanctuary caretakers are employed.

## PART IV.—CLIMATE AND TIME ZONES

### Section 1.—Climate\*

Just as there are great differences in the weather throughout Canada at any given instant, there are also many climates. These climates are not unique but are similar to those in Europe and Asia extending from the Arctic down to the mid-northern hemispheric latitudes. Because Canada is situated in the northern half of the hemisphere, most of the country loses more heat annually than it receives from the sun. The general atmospheric circulation compensates for this and at the same time produces a general movement of air from west to east. Migrant low pressure areas move across the country in this "westerly zone", producing storms and bad weather. In intervals between storms there prevails the fair weather associated with high pressure areas.

Although the movement of migrant high and low pressure systems within the zone of the westerlies is the most significant climatic control over Canada, the physical geography of North America contributes greatly to the climate. On the West Coast, the western Cordillera limits mild air from the Pacific to a narrow band along the Coast, while the prairies to the east of the mountains are dry and have extreme temperatures because they are shielded from the Pacific Ocean and are in the interior of a large land mass. In addition, the prairies are part of a wide north-south corridor open to rapid air flow from either north or south which often brings sudden and drastic weather changes to this interior area. On the other hand, the large water surfaces of Eastern Canada produce a considerable modification to the climate. In southwestern Ontario winters are milder with more snow, and in summer the cooling effect of the lakes is well illustrated by the number of resorts along their shores. On the East Coast, the Atlantic Ocean has considerable effect on the immediate coastal area where temperatures are modified and conditions made more humid when the winds blow inland from the ocean. The following paragraphs describe the climate of Canada by region.

The *Arctic* climatic region takes in the Arctic islands and that part of the Arctic Coast north of the tree line. This line corresponds in general to the position of the 50°F. isotherm in the warmest month of summer. In the Arctic there is no summer as that season is known in southern Canada, since July temperatures average lower than 50°F. Winters are long and severe with January temperatures averaging in the neighbourhood of -20°F. Along the coastal areas of the Arctic islands, temperature extremes over the year may vary from about 65°F. in summer to -65°F. in winter. Snowfall is relatively light but snow on the ground drifts and blows to an extent unknown in southern Canada.

The *Northern* climatic area extends in a broad band from the Yukon Territory in the west to Labrador in the east and from the tree line southward to the more settled portions of southern Canada. Thus, this region includes both the lightly treed barren lands in the north and the heavily timbered Boreal Forest Region in the south. Average temperatures in January are in the neighbourhood of -10°F. and in July range from 50°F. to 60°F. Rainfall and snowfall (especially snowfall) are abundant in the eastern portions but deficient in the northwestern section.

\* Prepared by the Meteorological Branch of the Department of Transport, Toronto. A comprehensive study on The Climate of Canada, also prepared by the Meteorological Branch, was carried in the 1959 Year Book, pp. 23-51. Supplementing that textual material, detailed tabulations of climatic factors for 45 individual meteorological stations across the country were carried in the 1980 Year Book, pp. 33-77. A reprint is available from the above source giving the complete textual and tabular data.