

thickly settled parts of Canada lie south of the Boreal Region, in what is termed the Austral Region. The most southern zone of this region (Australoriparian in the east and Lower Sonoran in the west) do not come within the boundaries of Canada, nor does the Tropical Region which does not extend farther north than southern Florida and the warmer parts of Mexico.

The Arctic Life Zone.—The Canadian islands north of the continent of North America are all in the Arctic Zone, and on the mainland the Arctic Zone extends from the Alaska boundary west of the Mackenzie delta in a southeasterly direction irregularly to Hudson bay, swings across the Ungava peninsula and along the Atlantic coast of Labrador to the strait of Belle Isle and the northern and northwestern part of Newfoundland.

Beginning with the circumpolar regions of the north of Canada, where conditions are simplified and species of plants and animals are fewer in number, is the treeless *Arctic Zone*, the so-called "barren grounds". The Arctic Zone is barren only on exposed rocks or areas of sand or infertile clay. Mosses and lichens are common. The woody plants are restricted to small, prostrate forms of willow, dwarf birch, Labrador tea, Lapland rose-bay, mountain cranberry, alpine bearberry, and similar types. As vegetal growth is slow, the plants are almost exclusively perennial, some of the bunch type growing on dry or rocky ground being alpine poppy, saxifrages of different species, various species of sedge, grasses, etc. Other plants growing in mats on the tundra are buttercup, mountain avens, white heather, etc. Other conspicuous herbaceous plants of the Arctic Zone are cotton-grass, sorrel, smartweed, lousewort, arnica, etc.

Characteristic breeding birds of the Arctic Zone are snowy owl (*Nyctea nyctea*), willow ptarmigan (*Lagopus lagopus*), rock ptarmigan (*Lagopus rupestris*), Lapland longspur (*Calcarius lapponicus*), snow bunting (*Plectrophenax nivalis*), and American pipit (*Anthus spinoletta rubescens*). Typical mammals are polar bear (*Thalarctos maritimus*), musk-ox (*Ovibos moschatus*), Barren Ground caribou (*Rangifer arcticus*), ermine (*Mustela arctica*), Arctic foxes, white and blue (*Alopec lagopus*), Arctic hares (*Lepus arcticus*), brown lemming (*Lemmus trimucronatus*), and white or collared lemming (*Dicrostonyx rubricatus*).

Substantially similar conditions are found farther south above timber-line in mountains, known as the Arctic-Alpine Zone, which is many thousands of feet above sea-level in warm climates, and comes down progressively until it meets the true Arctic Zone at sea-level in the Arctic regions. The Arctic and the Arctic-Alpine Zones in Canada have similar plant and animal assemblages, modified to some extent by colonizing from lower levels and by other local conditions, and the borders of the sparsely timbered Hudsonian Zone are also invaded by species which are truly Arctic. The *Dryas* species, characteristic flowering plants at sea-level in the Arctic, are also common on some of the high mountains in British Columbia, and the white-tailed ptarmigan (*Lagopus leucurus*) ranges from the mountains of Yukon to Colorado.

Hudsonian Life Zone.—The Hudsonian Zone is immediately south of the Arctic Zone, the nominal boundaries being the lines connecting the last straggling salients of the northern coniferous forests. The forests of this zone are generally thin and scanty, stunted in growth, the dominant tree being the white spruce, which may reach a good growth in thick stands, and even in isolated clumps in hollows with southern exposure and shelter from prevailing winds may form notable "big stick islands", or Hudsonian oases miles beyond the apparent boundaries of the northern Indian's picturesquely named "land of the little sticks" (small trees).