to well south of the present Great Lakes and must at times have formed barriers more complete even than to-day to the passage of life across the far north. During these periods of alternate isolation and connection there was ample time and opportunity for wide divergence in development in the faunas of the separated land masses, the extinction of connecting links and the occurrence of many complexities to confuse the clear picture of the historical succession, until to-day we find a nearly identical circumpolar fauna at the north progressively breaking up and differentiating into peculiar and special New and Old World forms as it proceeds south.

The general trend of geographical distribution in Canada is from southeast to northwest. Ocean currents have much to do with this. Our east coast is chilled by the cold arctic current coming directly down from the polar ice fields through Davis strait, and the west coast is warmed by the grateful temperature of the great final sweep of the Japan current. When we realize that the barren Labrador coast is in almost the same latitude as southern British Columbia and is slightly south of the most southerly point of the British Isles, we can see what a fundamental influence these ocean currents have on the distribution of life upon our continent. Elevation also has a determining influence on climate and the distribution of animal life. It is well known that high mountains even in the tropics present arctic conditions at their peaks. Less elevation has similar effect in proportion to its height and often a rise of a few hundred feet will produce conditions that otherwise would only occur at considerable distance to the north. Not only do mountain ranges thus project long tongues of northern faunas into southern localities, but on the retreat of the ice at the end of glacial epochs they formed oases for the retreating cold-loving forms as they withdrew from the gradually warming lowlands. We thus have true arctic " relicts " of an ancient order isolated on mountain tops far from their natural habitats,—boreal islands in a sea of more southern life.

Zonal Distribution.—The general outline of zonal life distribution is well known, as is the fact that tropical life differs from temperate and from arctic. Close study, however, shows that besides these broad and obvious associations minor ones also exist. Various attempts have been made to map them out, and perhaps the most successful and generally accepted one for our purposes is that which divides North America into three regions, Boreal, Austral and Tropical, with the first two each divided into three life zones: the Arctic, Hudsonian and Canadian zones for the Boreal region and the Transition and Upper and Lower Austral zones for the Austral region. In Canada we have five of these zones represented— from the north the Arctic, Hudsonian, Canadian, Transition and Upper Austral. These extend across the continent, roughly agreeing with latitude, but thrown out of regularity, as previously indicated, by local conditions and agreeing closely with the mid-summer isotherms.

The Arctic zone is the so-called " barren land " of the far north, and includes all the islands and the north shore of the continent. The distinctive land mammals of this zone are the polar bear, musk ox, barren land caribou, arctic fox, arctic hare and lemming. Amongst the characteristic birds are snow buntings, ptarmigan, longspurs, snowy owl and gyrfalcons. This region is the great nesting ground for many of our waders and more northern ducks and geese, but few are residents as most forms migrate in winter.

The Hudsonian zone is the land of scrub forests, small stunted trees, mostly coniferous, and scattered dwarf willows and poplars. The southern boundary of this zone extends from the north shore of the gulf of St. Lawrence to near the mouth