

daily temperatures of 55°F. as far north as the Mackenzie delta. On the other hand, in the northeast, the icy waters of the Arctic and the southward extension of the cold water in Hudson Bay provide a surface which, despite solar radiation, keeps average summer temperatures between 40° and 50°F. The southern limit of permafrost has been determined as running from the confluence of the Liard and Mackenzie Rivers, eastward along the north shore of Great Slave Lake and thence in a general southeasterly direction, crossing the 60th parallel of latitude just east of Lake Athabasca. The fact that only a small portion of the District of Mackenzie lies outside the permafrost area is an indication of the climate of the region.

The Mackenzie Basin.—A striking feature of the climate of the Mackenzie Basin is the wide range from summer to winter temperature. The long winters are intensely cold, -20°F. in January the coldest month; the summers have three months with temperatures over 50°F. with the warmest month, July, about 60°F. in the upper portion and 55°F. on the delta. Mean monthly temperatures are below 32°F. for seven months—October to April. Although winter minimum temperatures may fall below -70°F. and summer maxima rise above 95°F., such occurrences are infrequent. Except in summer the variation of the mean temperature for a month may be quite large. Local effects such as topography, distance from bodies of water, etc., have considerable influence on the length of the frost-free periods which varies from 50 to 100 days throughout the Mackenzie Basin.

As in other parts of the Northwest Territories precipitation is light in the Mackenzie Basin with a decided summer maximum. Annual totals range from 9 to 15 inches with considerable variability from year to year. Deficiency of precipitation appears to be the main check on such agricultural pursuits as other climatic and soil conditions may admit. Mean annual snowfall for the Mackenzie Valley averages 50 inches with a maximum in November. Snow is liable to fall in any month except July or August.

The Barrens.—The isotherm of 50°F. for the warmest summer month coincides fairly closely with the northern limit of tree growth. Beyond this line which runs from Aklavik to Churchill, the Barrens stretch northward to the Arctic and eastward to Hudson Bay. Most of the region is low-lying with countless lakes, swamps and muskeg. The climate is characterized by extremely short and cool summers and very long, cold winters. The cold Arctic seas, ice-covered for more than half the year, exert an unfavourable maritime influence on the region in summer.

Mean temperatures are below freezing for eight or nine months of the year and above 40°F. for only two months—July and August. During the warmest summer month the mean daily maximum rises to 55°F. or 60°F. and the mean daily minimum falls to about 40°F. Extreme summer temperatures have exceeded 85°F. generally in the Barrens. Spring comes very late, delayed by the slow melting of the ice, and subsequently, by the cold water of the sea, lakes and muskeg. Freezing temperatures may occur during any month of the year but on the average there is a frost-free period of 40 to more than 60 days throughout the region.

The Arctic coast is remarkably free of cloud in the mid-winter months but in the late summer and early autumn this region is among the cloudiest in Central Canada. Precipitation decreases from 12 inches in the south to seven or eight inches in the north, with snowfall contributing about 40 to 50 p.c. of the total moisture. The annual distribution of precipitation shows a maximum in the summer and early autumn and the ground is snow-covered for about eight months with the greatest monthly snowfall in October and November. Strong winds are frequent in winter especially in the District of Keewatin and the vast treeless expanses favour drifting which causes the snow to blow into the sheltered crevices and hollows and sweeps bare the open ground. Blizzards are most frequent near the coast of Hudson Bay.

The Arctic Archipelago.—The climate of the Arctic Archipelago may be classified as modified maritime Arctic. Despite the fact that mean annual temperatures are lower than in any other part of Canada, 15°F. in the extreme southeast and 0°F. in the very