

Arctic islands preliminary evidence suggests that these movements do not involve distances of more than 50 miles. On the mainland of Canada evidence suggests that musk-oxen there may move a distance of 50 to 100 miles or more to reach suitable feeding areas.

Much remains to be discovered about the reproductive biology of these ungulates. Their remote environment and relative scarcity make it difficult and expensive to conduct continuous long-term investigation. However, it is believed that musk-ox cows are mature at three or four years of age and bulls at five or six years of age. Cows do not seek a solitary spot to give birth to young, but remain with the herd. Evidence obtained from various studies suggests that calving occurs in alternate years with one calf delivered at a time. Twins are born rarely.

Fighting between adult bulls for the possession of herds and essentially of cows occurs chiefly during the months of July and August. Breeding occurs then, and the calving season extends from about the middle of April to the end of May. These dates appear to be true for the entire range of musk-oxen, which extends over a distance of 1,100 miles from latitude 64° N. to 82° N.

The calf percentage in a musk-ox population is low when compared with that of many other ungulates. On Fosheim Peninsula, for example, calves in 1951 comprised 9.2 p.c. of 215 animals, and in the Thelon Game Sanctuary in 1952 they were 11.2 p.c. of 169 musk-oxen. Calf survival was found to be extremely low in 1951 on Ellesmere Island, only three yearlings being present in the population studied. In the Thelon Game Sanctuary, however, survival in 1952 was found to be slightly over 60 p.c.

Canada's musk-oxen, in the rather distant future, may become an increasingly valuable resource. From a scientific viewpoint they present very interesting problems of research and management. From an economic viewpoint, as a result of eventual restocking of depleted areas and careful management of existing stocks, musk-oxen may once more reach the level of abundance where utilization could be permitted by natives or resident white people.

PART III.—CLIMATE AND TIME ZONES

Section 1.—Climate

A comprehensive discussion of the climatic regions of Canada is available in the 1948-49 Year Book, pp. 41-62, and detailed tabulations of climatic factors covering 36 meteorological stations located mostly at well known or populous centres are given in the 1950 Year Book, pp. 35-70. Other articles appearing in previous editions are listed under "Climate and Meteorology" in Chapter XXIX of this volume.

Table 1 gives long-term temperature and precipitation data for 35 representative Canadian stations; Tables 2 and 3 provide monthly temperature and precipitation data during 1956 for these same stations. These are mostly well sited or populous places with climates fairly representative of a considerable area. The figures given under "Temperatures" are averages obtained over the period of observation. Under "Precipitation", in calculating the annual total, inches of rain is considered the total depth of water accumulated on a hypothetical horizontal impervious surface without evaporation. Similarly the depth of snow given is that which falls on a horizontal surface without settling, melting or sublimation. Because the depth of water obtained from melting newly fallen snow is roughly one-tenth of the depth of the snow, the total precipitation is obtained by adding together the total rainfall and one-tenth of the depth of the newly fallen snow. A day with rain is, for the purpose of these tables, one on which 1/100 of an inch or more falls and a day with snow is one with at least 1/10 of an inch of newly fallen snow. Whenever the temperature four feet above the ground falls to 32°F. or lower the day is counted as a day with frost. The average date of the last spring frost and of the first frost in autumn marks the approximate period continuously free from frost.