

or a widening in a river. The cooling, dense air can flow out upon the water-surface, thus draining continuously the surrounding terrain. The warmer air raised off the water-surface, if there is no wind, will move slowly backward towards the nearby slopes. The effect is limited, of course, by the extent of the water-surface. Crops planted upon the depressed soil formerly occupied by an ancient lake or river-widening which is now dry land, suffer the full effect of the cold-air-drainage to this portion of land. There are, therefore, many local anomalies both above and below the general average length of the frost-free period in each district. The general effect is to limit seriously the character of plants which may be successfully grown on the Prairies. Wheat and coarse grains which can withstand light frosts at the beginning of the season and suffer only a lowering of quality by light frosts just prior to harvesting, are the principal crops of the Prairies. Except in Alberta, the menace of frosts even to these crops becomes very serious north of the North Saskatchewan River, elsewhere than along lakes or rivers. In Alberta, districts with frost-free periods averaging 90 to 100 days may be found as far north as the Peace River Valley if attention is paid to the local air-drainage.

*The Chinook.*—One of the most striking features of the weather of this Region occurs in winter. This is that spectacular change from bitter cold to comparative warmth, generally called the 'chinook'. It is most pronounced in southern Alberta from which area have come occasional news pictures of the inhabitants playing tennis in midwinter in a district where not many hours before the temperature had been severely cold. Not all 'chinooks' bring temperatures quite so high but the contrast between the temperatures of one day and the next may be very striking. The greatest contrast occurs when a severe prairie cold wave has occupied western Alberta and eastern Saskatchewan for one to three days with temperatures well below zero and the whole mass of very cold air accelerates suddenly towards the southeast. In this case, air from the Pacific Ocean which has been lying over the coast and filling the intermontane valleys of British Columbia moves eastward, crossing the Rocky Mountains. While the denser low levels of the Pacific air can reach the plains of Alberta only with great difficulty, usually moving northward through the intermontane valleys, yet the dry upper levels of the Pacific air cross readily enough, descending into eastern Alberta. The temperatures produced at Lethbridge and Medicine Hat will depend upon the characteristics of the particular body of Pacific air which moves east from British Columbia. If the temperature at sea-level on the Pacific Coast had been in the neighbourhood of 40°F., the temperature of levels around 5,000 feet will, after descent to 3,000 feet among the Rocky Mountain foothills, reach a temperature of approximately the freezing point. This may represent a sudden gain of 50 degrees and, since the air is usually very dry, the sun shines brightly, the temperatures rise in the afternoon, while the snow lying on the ground is rapidly lost to the warmer, drier air by sublimation. On the second day, if the ground is bare, it will again be heated to a considerable extent by the brilliant sunshine so that the afternoon temperature on this day may reach 50°F. in February, for at least an hour or two at Lethbridge. If the body of Pacific air has been lying over the State of Washington, northern Oregon, and southern Idaho, U.S.A., for some days with bright sunshine, before moving northeastward into western Montana State and southern Alberta, the temperature of the air coming through the passes of the Rocky Mountains and the Bitterroot Mountains may be much higher than the 50°F. quoted for Lethbridge, in fact, 66°F. in February and 65°F. in January have been recorded for that city. The effect of the 'chinooks' is