

material was deposited in the lower end of the lake and now forms the fertile land of the Red River plains of Manitoba.

The surface features of the great plains are quite diverse. The general conception of them as a vast area of level, treeless country is descriptive of the southern portion only; and even this portion is not without variety in its topography, since a large part of it is a northeasterly-sloping plateau of Mesozoic sediments, etched into somewhat irregular surface contour and overlapping a lower plain that meets the sloping and irregular surface of the Canadian Shield.

In the belt traversed by the railway lines a threefold division into prairie steppes, rising one above the other, is clearly recognizable, though the divisions are not distinguishable in the region farther north to which the term prairie is not applicable. For the purpose of description in the following pages these three divisions are adopted and a fourth is added for the broken hilly country of the foot-hills.

The first or eastern division comprises the plain lying between the Canadian Shield and the plateau formed of Cretaceous sediments; the second extends from the edge of this plateau westward to the erosion remnants of former Tertiary deposits; and the third stretches from this line westward to the foot-hills. North of the prairie country these distinctions are less noticeable, and divisions two and three become merged into one.

#### FIRST DIVISION.

The eastern division is the lowest in elevation and in Manitoba and northern Saskatchewan is essentially a region of lakes. It narrows up in the vicinity of lake Athabaska but widens northward to form the lowlands, through which the Mackenzie river flows to the Arctic. The drainage of the southern, narrow part is to Hudson bay, by the Churchill and Nelson rivers. This plain is underlain, generally, by gently-sloping beds of Paleozoic limestone smoothed over by a cover of glacial till. South of lake Winnipeg the till is covered by clays and silts deposited in glacial lake Agassiz. Thus was formed the rich farming land of southern Manitoba, where the extreme evenness of surface is noticeable because of the general absence of timber. This plain is, however, being partly forested by planting and by the natural growth which is taking place now that prairie fires are largely suppressed. The lake basins are due mainly to the removal of Paleozoic rocks from the older, westerly-dipping rock-surface.

In the Mackenzie lowlands the limestone ridges of the Franklin range divide the lower part. The western boundary of the plain southwest of Great Slave lake has not been very definitely fixed yet owing to lack of exploration and the supposed gradual slope from the plateau. The surface does not stand at great elevations above the large lake basins, and the eastern edge, where it joins the rough crystalline rocks of the Canadian Shield, varies in elevation but is highest at the head of Churchill river, where Buffalo lake is given an elevation of 1,330 feet. The slope eastward is gradual, the basin of Cumberland lake on the Saskatchewan standing at 870 feet. Lake Winnipeg, the lowest point on the Nelson river drainage of this plain, is 710 feet above the sea. From the highest point in this division, at the head of Churchill river, the slope north to lake Athabaska is the steepest found along the eastern margin, the descent being about 600 feet. Northward the slope is very gradual, as is shown by the Mackenzie river which is navigable for steamers from the delta at the Arctic ocean to near lake Athabaska. The fall in this distance (about 1,300 miles) is about 550 feet.

#### SECOND DIVISION.

The lower or eastern portion of the Cretaceous plateau is underlain by a succession of shale beds and other equally soft rocks that have been somewhat unevenly carved and cut by stream erosion. It stands at an elevation of about 1,500 feet above