

The Pierre or next overlying group is in point of extent the most important of the sub-divisions of the Cretaceous in the North-West, its characteristic dark shales or shaly-clays underlying a great part of the prairie country. The shales frequently contain ironstone nodules, and in some places arenaceous layers also appear and are generally found to become more important in approaching the mountains. The lithological character of this group is, however, on the whole remarkably uniform and beds are occasionally found in it which are highly fossiliferous. The highest beds of the Cretaceous system proper, the Fox Hill, are closely related to the Pierre, and form in many places a series of passage beds between the Cretaceous and the overlying Laramie formation. When most characteristically developed they consist of sandstone and yellowish sandy shales.

Overlying the Cretaceous proper in perfect conformity is a great series of estuarine and fresh-water beds which may collectively be referred to the Laramie formation. No question in western geology has given rise to so much discussion as that of the Cretaceous or Eocene age of these beds. It is one which depends almost entirely on the apparently conflicting evidence of the vertebrate, molluscan and vegetable fossils which they contain, and one which cannot here be entered into. On the accompanying map this formation is indicated by a separate colour, because of its lithological difference from the underlying Cretaceous, its influence as a cause of plateaus and other features, and its importance in connection with the fuel supply of the country.

The most eastern locality of these beds is Turtle Mountain, on the 49th parallel, where they form an extensive outlier. On the Souris River they are largely developed, and constitute the superficial formation of the whole country. The Laramie of this region is, however, an extension of that special development of the formation on the Missouri which has long been known as the Fort Union series. The rocks are generally soft sandy clays and sandstones, of pale colours, and on the Souris hold ironstone and many seams of lignite of fair quality. Further west the typical Laramie covers a vast area and becomes a distinctly estuarine formation at the base, and the connection between this and that of the Souris beds yet remains to be clearly established. The western Laramie, particularly in the vicinity of the mountains, is largely composed of sandstones which are frequently quite hard. This formation has a thickness of several thousand feet in the country about the Bow and Belly Rivers, where it has been sub-divided into three groups which are enumerated in tabular form on a subsequent page.

A small area of Miocene Tertiary rocks was discovered in 1883 in the Cypress Hills, where it overlies Cretaceous and possibly, in some places, Laramie beds. The rocks are chiefly pebble-beds, or conglome-

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