

the intervention of any other formation,<sup>1</sup> are beds rich in plants of much more modern appearance, and referred by Heer to the Miocene period, a reference which appeared at the time to be warranted by comparison with the Tertiary plants of Europe, but, as we shall see, not with those of America. Still farther north this so-called Miocene assemblage of plants appears in Spitzbergen and Grinnell Land; but there, owing to the predominance of trees allied to the spruces, it has a decidedly more boreal character than in Greenland, as might be anticipated from its nearer approach to the pole.<sup>2</sup>

If now we turn to the Cretaceous and Tertiary floras of Western America, as described by Lesquereux, Newberry, and Ward, we find in the lowest Cretaceous rocks known there until very recently—those of the Dakota group, which may be in the lower part of the Middle Cretaceous—a series of plants<sup>3</sup> essentially similar to those of the Middle Cretaceous of Greenland. To these I have been able to add, through the researches of Mr. Richardson and Dr. G. M. Dawson, a still earlier flora, that of the Kootanie and Queen Charlotte Island formations, as old as the Gault and Wealden. It wants the broad-leaved plants of the Dakota, and consists mainly of pines, cycads, and ferns; and only in its upper part contains a few forerunners of the exogens.<sup>4</sup> These plants occur in beds indicating shallow sea conditions as prevalent in the interior of America, causing, no doubt, a warm climate in the north. Overlying this plant-bearing formation we have an oceanic limestone (the Niobrara), corresponding in many respects to

<sup>1</sup> Nordenskiöld, Expedition to Greenland, *Geological Magazine*, 1872.

<sup>2</sup> Yet even here the Bald Cypress (*Taxodium distichum*), or a tree nearly allied to it, is found, though this species is now limited to the Southern States. Fielden and De Rance, *Journal of Geological Society*, 1878.

<sup>3</sup> Lesquereux, Report on Cretaceous Flora. The reader not interested in American details may pass over to the middle of page 213.

<sup>4</sup> This flora has since been described in Virginia and Maryland by Fontaine, and has been recognised in Montana by Newberry.