

plants of Mackenzie River, published as late as June, 1880,* still regards them as Miocene. As the opinions of a paleobotanist so eminent deserve careful attention, it may be well to examine the reasons which he gives.

1. He affirms that none of the species occur in the Eocene of Europe. But the Eocene of Europe presents features distinct from those of any American Tertiary Flora, and depending evidently on peculiar geographical conditions. Further, Gairdner and others hold that Heer unduly limits the European Eocene; and if their views were established, the statement made by Heer would fall to the ground.

2. Several of the plants are common to the Laramie beds and to the so-called Miocene of Saghalien, of Alaska, and of Greenland. With respect to the former, there is reason to suspect that the Saghalien flora, as described by Heer, may be Cretaceous. It has many points in common with the Flora of Nanaimo, and it occurs in beds resting immediately on deposits holding Cretaceous animal remains. The Alaska and Greenland floras have not been proved to be Miocene, and as the Greenland flora succeeds the Cretaceous without the intervention of any other flora, it is not improbably really Eocene.

3. The Mackenzie River beds present few points of identity with those of the American Eocene; but in making this comparison Heer classes as Miocene the Green River and Fort Union beds, which may be representatives of the beds in question, but which all American geologists regard as Eocene, or older. He can thus only compare the Laramie group with that portion of the older Tertiary admitted by Lesquereux as Eocene, while the other Eocene or later Cretaceous beds of the adjoining parts of the United States, are left out of the comparison, being, like the Canadian Laramie, arbitrarily relegated to the Miocene.

The following tabular view will serve to show the actual difference between Heer and the geologists of the United States and Canada with reference to the Laramie beds:—

Eocene and Cretaceous beds, as given in Clarence King's Report on the 40th Parallel.

Eocene.—Uinta Series.

Bridger Series.

Green River Series.

Vermillion Creek (Coryphodon beds).

Cretaceous.—Laramie?

Fox Hill.

Colorado.

Dakota.

According to Lesquereux, the Green River beds of the above list are Upper Miocene, the Vermillion beds are Lower Miocene, and the Laramie are Eocene. But according to Heer even the Laramie, or a large portion of it, is Miocene. The actual origin of this error is the continuance of similar Floras in America from the Middle Cretaceous up to the modern time, while much greater changes have occurred in Europe within the same great periods.

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