

review

Lignitic or Fort Union Group. To this belong the plants from Porcupine Creek and the Souris River described by the writer in Dr. G. M. Dawson's Report on the 49th Parallel; and in the Reports of the Geological Survey of Canada,* the plants described by Heer from Mackenzie River,† and those of the Fort Union beds of the Upper Missouri described by Newberry and others. They constitute also the Lower Tertiary or Lignitic Flora of Lesquereux.‡

With reference to the age of the Laramie beds, considerable diversity of opinion has prevailed, and I do not purpose here to ~~repeat~~ the discussions which have taken place; but merely to state what seem to be well ascertained facts. These are as follows:—

1. The Laramie beds pass downward into the undoubted Upper Cretaceous, without any stratigraphical break.
2. Their invertebrate fossils being largely fresh-water and estuarine and partly of Cretaceous, and partly of Lower Tertiary types, do not give very precise indications of age, but the beds hold reptilian remains of genera usually held to be Mesozoic, while no mammalian remains have yet been found.
3. According to the observations of the United States geologists, the Laramie beds are known to underlie, in some places conformably, and in others unconformably, the Wahsatch series, which is regarded as Middle Eocene.
4. The flora is distinct on the one hand from that of the Cretaceous below, and on the other from that of the undoubted Miocene of British Columbia and the South-Western States.
5. The Laramie Group has been subdivided on stratigraphical grounds into four sections, but no grounds are known which would warrant its division into distinct formations.

Clarence King, in his Geology of the 40th Parallel, places the Laramie in the Cretaceous, on the evidence, more especially, of its vertebrate remains. Puzzled, however, by the confident assertions as to the Miocene aspect of certain fossil plants, he seems to suspect that in the Fort Union series there may be a confusion of the Tertiary beds with the Cretaceous. He places, however, without hesitation in the Eocene the Green River group, whose plants are placed by Lesquereux with the Miocene. White, the Palæontologist of the United States Survey of the Territories, approaches to the same general view when he says in his report of 1880, that the Laramie is "a transitional group between the Cretaceous beneath and the Tertiary above."§ This was the opinion expressed by the writer, with reference to the Canadian development of the Laramie, in the Report of the Boundary Commission in 1875; and more recently in a note on Fossil Plants collected by Dr. Selwyn.||

But though I believe no American geologist or palæontologist would now hold these beds to be newer than the oldest Tertiary, I observe that Heer, in a note on the fossil

* 1879-80.

† Flora Fossils Arctica.

‡ Tertiary Flora, Geological Survey of the Territories of the U. S.

§ See also papers by Prof. Stevenson in Am. Journal of Science, and in Report of Wheeler's Survey, 1881.

|| Report of Geol. Survey of Canada, 1879-80.