

Viviparus.¹⁸⁶ The abundant terrestrial flora resembles in many respects the present flora of North America. A few of the plants are common to the Middle Tertiary flora of Europe, and a number of them have been met with in the Tertiary beds of the Arctic regions. Some of the seams of vegetable matter are true bituminous coals and even anthracites. According to Cope, the vertebrate remains of the Laramie group bind it indissolubly to the Mesozoic formations. Lesquereux, on the other hand, has insisted that the vegetation is unequivocally Tertiary. The former opinion has been maintained by Clarence King, Marsh, and others; the latter by Hayden and his associates in the Survey of the Western Territories. Cope, admitting the force of the evidence furnished by the fossil plants, concludes that "there is no alternative but to accept the result that a Tertiary flora was contemporaneous with a Cretaceous fauna, establishing an uninterrupted succession of life across what is generally regarded as one of the greatest breaks in geologic time." The vegetation had apparently advanced more than the fauna in its progress toward modern types.¹⁸⁷ The Laramie group was disturbed along the Rocky Mountain region before the deposition of the succeeding Tertiary formations, for these lie unconformably upon it. So great have been the changes in some regions, that the strata have assumed the character of hard slates like those of Palæozoic date, if indeed they have not become in California thoroughly crystalline masses. The same mingled marine and terrestrial type of Cretaceous rocks can be followed into California, where the higher parts of the series contain beds of coal. The coast ranges are described by Whitney as largely composed of Cretaceous rocks, usually somewhat metamorphic and sometimes highly so.¹⁸⁸ In the foot-hills, on the eastern slopes of the Rocky Mountains, near the United States and Canadian boundary, the beds are comparatively undisturbed and the coal is bituminous; within the Rocky Mountain area the strata are greatly contorted and the coal is there anthracitic.

¹⁸⁶ C. A. White, "A Review of the Non-Marine Fossil Mollusca of North America," 3d U. S. Geol. Survey Report, 1883; Bull. U. S. Geol. Surv. No. 34, 1886. See the same author's paper on the mingling of an ancient fauna and modern flora in these deposits, Amer. Journ. Sci. (3) xxvi. p. 120.

¹⁸⁷ See remarks ante, pp. 1096, 1111. Neumayr (N. Jahrb. 1884, i. p. 74) makes a comparison between the Laramie group and the inter-trappean beds of the Deccan.

¹⁸⁸ G. F. Becker, Amer. Journ. Sci. xxxi. 1886, p. 348.