

over Mexico during this time the Atlantic and Pacific oceans were united. He makes the thickness 20,000 feet.

*Rocky Mountain region and Central Interior.* — The Lower Cretaceous of the Rocky Mountain region includes, at some localities at base, the fresh-water Kootanie beds of Dawson (1885), so named from the Kootanie Pass, in the Rocky Mountains, about 30 miles north of the 49th parallel, where they were first found and characterized by their fossil plants. The beds are sandstones and shales, and contain some coal. Other localities occur at intervals to the northward for 150 miles, and to the southward in western Montana. The beds also outcrop, according to recent determinations by L. F. Ward, about the Black Hills, in western Dakota, where they have a thickness of 200 to 300 feet, contain trunks of Cycads and other plants, and underlie plant beds of the Dakota group (Upper Cretaceous) to which they had been referred. How far they extend eastward and southward is not yet ascertained. In New Mexico they are mainly marine beds, and resemble those of Texas, with which they are continuous.

*Pacific border.* — The Lower Cretaceous beds of the Pacific border in the United States are marine, but in British Columbia they are partly of fresh-water or marsh origin. They occur (1) in the Plateau or interior region of British America, and (2) along the Coast belt.

Over the Plateau region they are described as extending over Washington to the Yukon district and northward to the Arctic Ocean (G. M. Dawson). The Plateau region within the United States, that is, the Great Basin, was apparently emerged; but south in Mexico, as already described, long submergence is proved by the existence of many thousand feet in thickness of Lower Cretaceous beds.

The coast region has a border of Lower Cretaceous beds along the greater part of California and Oregon, and also on Queen Charlotte Islands and Vancouver Island; and again far north along both the northern and southern shores of the Alaskan peninsula.

The beds in California constitute the *Shasta group* of J. D. Whitney (1869). They are well exposed along the western border of the Sacramento valley, where they are divided into the *Knoxville* and *Horsetown* beds — so named from localities in the region by C. A. White. These two groups were made by White to represent only part of the Shasta group; but later observations by Diller and Stanton (1893) show that they correspond to the whole. In Tehama County the total thickness is about 26,000 feet; in Shasta County, where the Horsetown beds alone occur, 5200 feet (Diller, Stanley-Brown). The Knoxville or lower group has among its fossils various forms of *Aucellæ* (Figs. 1203–1205, page 759), and the Horsetown includes in its abundant fauna many Ammonites; the species of the two have close relations to the Neocomian, Gault, and intermediate beds of Europe. The two groups in California thus cover the whole of the Lower Cretaceous; and these are continued in the Chico series of the Upper Cretaceous (Diller).

In British America, the lower part only of the coast Cretaceous on Van-