

to the northern boundary of Nevada, in Humboldt County, just west of the northern end of the Pine Forest range of mountains. To the deposits has been given the name of Thousand Creek beds. The geology and palaeontology of the region have been treated by Dr. John C. Merriam; the geology in 1910 (Bull. Dept. Geol. Univ. Calif., vol. vi, pp. 43-52); the palaeontology in 1911 (same Bull., vol. vi, pp. 199-304). Again in 1917 (same Bull., vol. x, pp. 421-443), Merriam presented a list of the species found in the Thousand Creek beds and compared them with those found in various localities in the United States and regarded as belonging to the Pliocene.

The faunas of the Great Basin which are brought into comparison are (a) that of Ricardo beds of southern California; (b) that of the Thousand Creek of Nevada; and (c) that of the Idaho beds of southwestern Idaho. Of these the Ricardo is regarded as the oldest and the Idaho as the youngest, the last being looked upon as belonging possibly to the early Pleistocene. The faunas of the Great Plains that are compared are (a) the Republican River of Kansas; (b) the Snake Creek of Nebraska; (c) the Blanco of Texas; and (d) the so-called Loup Fork of Nebraska. Of these the Republican River fauna is put at the bottom of the Pliocene, the Snake Creek at about the middle and as older than the Blanco. The Loup River fauna has since Merriam's writing been quite definitely referred to the Pleistocene, equivalent to the Aftonian. Merriam regarded the Blanco fauna as being younger than the Thousand Creek. The Blanco assemblage is, however, rather meager, consisting of only about 14 genera and 19 species at most. In the Thousand Creek fauna are about 28 genera, including only the mammals, and 36 species. Dr. Merriam believed that the Idaho vertebrates represented the most recent Pliocene fauna then known; that the Blanco was somewhat older and that the Thousand Creek fauna was still somewhat older. As already remarked, the Loup Fork beds are now placed in the second stage of the Pleistocene and it is believed by the writer that the Idaho formation and its fossils belong to the first stage, the Nebraskan; probably to the close of it when the climate had become moderated. This conclusion leaves the Blanco and the Thousand Creek beds competing for the first place at the top of the Pliocene. The writer sees little difference between them. In each, approximately half of the genera belongs either to the Pleistocene or to the Recent. Indeed, it is only the lack of true horses, of elephants and of bisons, that restrains the writer from referring both of them to the lowest Pleistocene.

### CALIFORNIA

In our study of the Pleistocene geology of California, so far as it has connection with vertebrate palaeontology, it appears convenient to divide the State into three regions. The first of these includes the eastern and southern portions, those forming a part of the Great Basin region; the second is that occupied by the Sierra Nevada Range, and this will be regarded as limited on the west by the upper Klamath River, the Sacramento, the San Joaquin, and King Rivers, and the Lakes Tulare, Buena Vista, and Kern; the third region is that part of the State lying west of these rivers and lakes and, farther south, including the coastal slope drained by rivers emptying into the Pacific.