

height of 1600 feet on the borders of Puget Sound, but nothing is further known with regard to the formation. G. M. Dawson states that beds, probably marine, occur at Queen Charlotte Islands and along the Straits of Georgia at a height of 100 to 200 feet.

Between San Francisco and San Diego, shore-lines and terraces have been observed by A. C. Lawson, at various levels up to 1500'; but no marine fossils are present, so that whether Quaternary or Pliocene is uncertain. The heights measured near San Diego are from 160' to 700'; on San Pedro Hill, 120' to 1240'; on San Clements Island, from 12' to 1500'; the Bay of Monterey, near Santa Cruz, from 96' to 120', part of them showing grandly from the bay. Moreover, the Pliocene, near San Francisco (page 892), has now a height of 720' above sea level.

About the mountains of the Interior Plateau of British Columbia, as stated by G. M. Dawson, there are extensive terraces 5000' to 5500' above sea level; and in the more southern part of the plateau, of 3900' to 4900'. But they afford no marine fossils, and their origin remains unexplained. Dawson questions whether they may not have been made by superglacial lakes.

The depths of the submerged river channels of the California coast (page 949) indicate an equal subsidence of the region, if the channels were made, as is believed, during the Glacial period.

4. *The Winnipeg-Lake basin, in the Central Continental Interior, and Hudson Bay.* — The former discharge of a river from 55° N. in the Winnipeg region, down the Minnesota into the Mississippi, as first made known by G. K. Warren, is mentioned on page 947. Later, as the same authority pointed out, the region then elevated had subsided and become the area of a vast lake. The outline of this lake, and the region of lakes it covers, are shown on the map, Fig. 1548, from the report by Upham, who named the lake, Lake Agassiz. Its waters extended, according to the map, from the Minnesota divide at Traverse Lake in 45° 40', over the Red River and Winnipeg region, to 55° N. in Manitoba, nearly half of the whole length, 700 miles, being in Minnesota. The upper shore-line, called by Upham the Hermann Beach, was traced from Lake Traverse, where it is 85 feet above this lake, and 1055 feet above sea level, northward for more than 300 miles, where the height about the Brandon Hills is 1260 to 1269 above sea level, and about 560 feet above the present level of Lake Winnipeg. This shore-line indicates, therefore, a great Champlain depression for the region about Winnipeg. The Hermann Beach rises northward at a rate of six inches a mile near Lake Traverse, to 16 inches to the northward, bearing evidence, inasmuch as the lines were horizontal when made, of a subsequent elevation that increased northward, the time of which was probably at the opening of the Recent period.

Warren accounted for the non-discharge of the great lake by the present outlet, Nelson River, into Hudson Bay, on the ground of a land barrier; and his explanation appears to be sustained by the course of events of the period. For, if the region of the Laurentide ice-plateau about Hudson Bay was elevated 3000 feet or more in the Glacial period, the continuation into the early part of the Champlain period of only a small portion of this elevation