

reckoning only from the Sandwich Islands to the Friendly Group (or to Tongatabu) is over twenty-five hundred miles, thus equalling the width of the North American continent. A movement of such extent, involving so large a part of the earth's crust, could not have been a local change of level, but one in which the whole sphere was concerned as a unit; for all parts, whether participating or not, must have in some way been in sympathy with it.

This subsidence was in progress, in all probability, during the Glacial era, the thickness of the reefs proving that in their origin they run back through a very long age, if not also into the Tertiary. It was a downward movement for the tropical Pacific, and perhaps for the warmer latitudes of all the oceanic areas, while the more northern continental lands, or at least those of North America, were making their *upward* movement, preparatory to, or during that era of ice.

The subsidence connected with the origin of coral islands and barrier reefs in the Pacific has been shown (p. 281) to have amounted to several thousands of feet, perhaps full ten thousand. And it may be here repeated, that, although this sounds large, the change of level is not greater than the *elevation* which the Rocky Mountains, Andes, Alps, and Himalayas have each experienced since the close of the Cretaceous era, or the early Tertiary; and perhaps it does not exceed the upward bulging in the Glacial era of part of northern North America.¹

The northern continental upward movements which introduced the Glacial era, carrying the Arctic far toward the Tropics, may have been a balance to the *downward* oceanic movements that resulted in the formation of the Pacific atolls. While the crust was arching upward over the former (not rising into mountains, but simply arching upward) it may

¹ The arguments which have seemed to favour the view that the portions of North America in the higher latitudes, and probably also in the corresponding parts of the other continents, were above their present level, are briefly presented by the author in his "Manual of Geology," and also, recently, in the *American Journal of Science*, third series, volume v.