the southern Pacific Ocean, are steepest on their western side. In ranges of mountains that form the boundaries of lakes or of extensive vales, through which large rivers flow, the mountains nearest to the rivers have the steepest declivities. The largest rivers have their origin from the sides of mountains which are most inclined to the horizon, and most remote from the sea.

The beds or strata of very lofty mountains are, generally, much inclined, and are sometimes nearly vertical. Among these highly inclined beds, we, not unfreqently, observe beds of limestone containing marine shells, which must have been originally deposited at the bottom of the ocean. In some instances we meet with vertical strata containing rounded pebbles and water-worn fragments of other rocks; these must also have been originally deposited on a surface nearly horizontal: we are therefore certain, that the present vertical position of these strata is not their original one, and we hence also learn, that all the strata associated with them in the same mountain, and having the same inclination, were raised together. We have further proof that, before the epoch when this great revolution was effected, all these beds were covered by the seas then existing, and it was under the ocean that the change of position took place.

No person who reflects on the appearances presented in a mountainous district can believe that the broken and elevated beds, the peaked summits, the impending cliffs, and the immense fragments of rock scattered in the valleys and adjacent countries, were, originally, created and placed as we now observe them.

The traveller, who, in crossing an extended desert, should meet with the remains of some unknown temple, could not for a moment doubt that the broken and prostrate columns, the mutilated arches, the scattered capitals and inscriptions, had been removed, by some devastating cause, from their original position; nor, is the proof less certain, that the rocky pavement of our globe has been broken, and its parts, which were once united, widely separated from each other. Some of the phenomena, observed in mountains, were produced by the disturbing force which first elevated them; others were subsequently effected, either by vast inundations, or by torrents, that have torn away considerable portions of the softer beds, or by the more gradual decomposition and disintegration produced by atmospheric influence; by the latter cause, the lofty and exposed peaks and escarpments of rocks are, constantly, wearing down.

During the two summers I passed in the Alps, I was much struck with the circumstance that all the great openings or passages over these mountains, called *Cols*, were made by excavations in beds of soft slate; and the fact I think admits of an easy explanation, but I do not know that it has been before remarked by geologists.

If we suppose a portion of the Alps to be represented, Plate II. Fig. 2. the dotted lines above the present surface will mark the supposed original prolongation of the different beds, at the period when