

corresponding portion descends into the interior. Mr. Fisher believes that this downward bulging of the lighter materials of the crust into a heavier substratum underneath the great mountain-uplifts of the surface is indicated by the observed diminution in the normal rate of augmentation of earth-temperature beneath mountains,³ and by the lessened deflection of the plumb-line in the same regions.

The close connection between upheaval and denudation on the one hand and depression and deposition on the other has often been remarked, and striking examples of it have been gathered from all parts of the world. It is a familiar fact that along the central and highest parts of a mountain-chain, the oldest strata have been laid bare after the removal of an enormous thickness of later deposits. The same region still remains high ground, even after prolonged denudation. Again, in areas where thick accumulations of sedimentary material have taken place, there has always been contemporaneous subsidence. So close and constant is this relationship as to have suggested the belief that denudation by unloading the crust allows it to rise, while deposition by loading it causes it to sink (ante, pp. 500, 501).⁴

It is evident that in the results of terrestrial contraction on the surface of the whole planet, subsidence must always have been in excess of upheaval—that, in fact, upheaval has only occurred locally over areas where portions of the crust have been ridged up by the enormous tangential thrust of

³ The rate observed in the Mont Cenis and Mont St. Gothard tunnels was about 1° Fahr. for every 100 feet, or only about half the usual rate.

⁴ This belief has been forcibly urged by American geologists who have studied the structure of the Western Territories. See especially the geological Reports of Mr. Clarence King, Major Powell and Captain Dutton; also Mr. T. Mellard Reade's "Origin of Mountain-Ranges," and *Phil. Mag.* June, 1891.