shook the ground and bulged the terrestrial crust into mountain saliences. They had seen mountain caps blown off, and mountains cracked open; they had even seen Sabrina and Graham's Island and many Ægæan islands lifted from the bottom of the sea, and sustained at an elevation of some hundreds of feet. Were not these efforts at mountain-making and unmaking? Had it not been ascertained, too, in more recent times, that Vesuvius and Ætna, with all their loftiness and massiveness are mere piles of stuff brought up by volcanoes, and built by volcanic action into mountain forms? Is not Mt. Hood a pile of lava? And who can affirm that Ranier, Lassen, St. Elias, Popocatapetl, Cotopaxi, are not similarly masses of piled up lavas?

Yes, the reasoning is good for a certain class of mountains. But the Adirondacks are not a pile of lava; nor the Laurentides; nor the Appalachian ranges; nor the White Mountains; nor the Rockies. Here has been lifting to which all volcanic work bears a very feeble comparison. If Ætna and Hood are piles of volcanic *débris*, consider how small a part was lifted at once. The ascent of the mountain materials has been like that of wheat in the grain elevator—little at a time, but much in the aggregate. Look at the Adirondacks, on the other hand—here is a vast framework; all the parts were formed and adjusted together before the uplift; and when the time arrived, the total mass was raised in one stupendous mechanical effort. We must seek a greater power than the volcano.

It is not a trivial problem. It has puzzled the most expert of brains. But I think you have made the acquaintance of forces and modes of action which furnish us a real clew to the mechanism of mountain making. Your attention has been directed to many indications of the presence and action of heat in the earth. You have even reached the inference that the earth is a cooling globe. [But see further in Talks XXXVII and XXXVIII.] Now, you have often witnessed the power of heat. When it enters a solid or liquid, expansion takes place, and the power of expansion surpasses human