

bottom, and the walls of the gap were left to rise precipitously on each side. Other mountains have been rent by fissures. These generally run lengthwise of the range—most frequently along the center. When they exist, the strata on one side are generally found depressed below the level of the corresponding strata on the other side. Such a case is a *fault*. In the Appalachians are faults of five thousand to twenty thousand feet. A greater one cuts through the Uintas. The Sierra Nevada, for three hundred miles, has been split lengthwise along the middle, and the eastern half, for a large part of the distance, has gone down three thousand to ten thousand feet. So the west half the Wahsatch went down forty thousand feet for a length of at least one hundred miles.

Of *mountains of relief*, like the Catskills and the Cumberland Table Land, something has already been said in Talk IX, and nothing more is necessary here. Mountains composed of volcanic accumulations are mentioned in Talks XV and XVI.

XX. HOW THE MOUNTAIN FRAMEWORK IS REARED.

MOUNTAIN FORMATION.

By what machinery were these mountain masses upraised? By what motive force was it actuated? When we look up toward the sky and see the form of Mont Blanc profiled against the clear blue—far away—far up where the white clouds cap the mountain's hoary head, we realize partially that an enormous power has been exerted; we reflect that the upraising of a mountain was as truly a mechanical work as the erection of the obelisk in Central Park. Let us try to reproduce to imagination the process by which Nature builds the great mountains—the great mountains of upheaval.

Generations past, which had witnessed the tremendous power of Vesuvius and Ætna, thought the volcano adequate for the production both of earthquakes and mountains. It was steam and gases trying to find vent, they said, which