

Thence once more the vapor rises, condensing into clouds and rain to feed the innumerable water-channels by which the land is furrowed from mountain-top to sea-shore.<sup>42</sup>

In this vast system of circulation, ceaselessly renewed, there is not a drop of water that is not busy with its allotted task of changing the face of the earth. When the vapor ascends into the air it is, comparatively speaking, chemically pure. But when, after being condensed into visible form, and working its way over or under the surface of the land, it once more enters the sea, it is no longer pure, but more or less loaded with material taken by it out of the air, rocks, or soils through which it has travelled. Day by day the process is advancing. So far as we can tell, it has never ceased since the first shower of rain fell upon the earth. We may well believe, therefore, that it must have worked marvels upon the surface of our planet in past time, and that it may effect vast transformations in the future. As a foundation for such a belief let us now inquire what it can be proved to be doing at the present time.

### § 1. Rain

Rain effects two kinds of changes upon the surface of the land. (1) It acts *chemically* upon soils and stones, and, sinking under ground, continues, as we shall find, a great series of similar reactions there. (2) It acts *mechanically*, by washing away loose materials, and thus powerfully affecting the contours of the land.

1. **Chemical Action.**—This depends mainly upon the nature and proportion of the substances abstracted by rain from the air in its descent to the earth. Rain absorbs a

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<sup>42</sup> For estimates of the distribution of rain over the globe, see Murray, *Scottish Geol. Mag.* 1887.