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? WHY THE WEATHER ?

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RAIN SHADOWS

Mountains cast rain shadows; often there is the greatest difference in rainfall between the lee and windward sides. This ^{is} particularly well illustrated in case of islands in the trade wind belts. The trade wind, laden with water vapor, blows persistently from one direction. If it meets high cliffs or mountains, it is forced to rise, the air expands and cools, and much of the water vapor condenses as rain on the windward slopes. A little of the rain "spills" over the crest of the mountains, but not much falls on the lee side, where the wind is descending and warming. On the island of Maui in the Hawaiian group is a volcano about 5,000 feet high. Near the summit of this volcano on the windward side the annual average rainfall is 370 inches, while only 5 miles away at the foot of the mountain on the lee side, it is but 16.5 inches. We think a rainfall of 40 inches ample, and under 20 inches scanty. Still more striking is the condition on Kauai, where at Mt. Waialeale (5080 feet) the rainfall for six years averaged 476 inches, the greatest known in the world, while at Pali Trail 12.5 miles to leeward the rainfall for the same years averaged only 15 inches. Jamaica and Porto Rico show similar contrasts; windward slopes receive over 100 inches of rainfall and support a luxuriant tropical vegetation, while the slopes may have less than 15 inches, and appear relatively barren. Our Pacific coast ranges and Rockies successively extract rainfall from the westerly winds off the ocean, leaving little moisture available for the plateau and Western Plains region. Luckily for Europe it has no mountain barrier along its western coast, so that the rain bearing winds carry their moisture further inland and distribute it more evenly.

(Tomorrow: Inversions of Temperature)
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