

# **FOREST AND WATER**

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Forest and Water by Abbot Kinney

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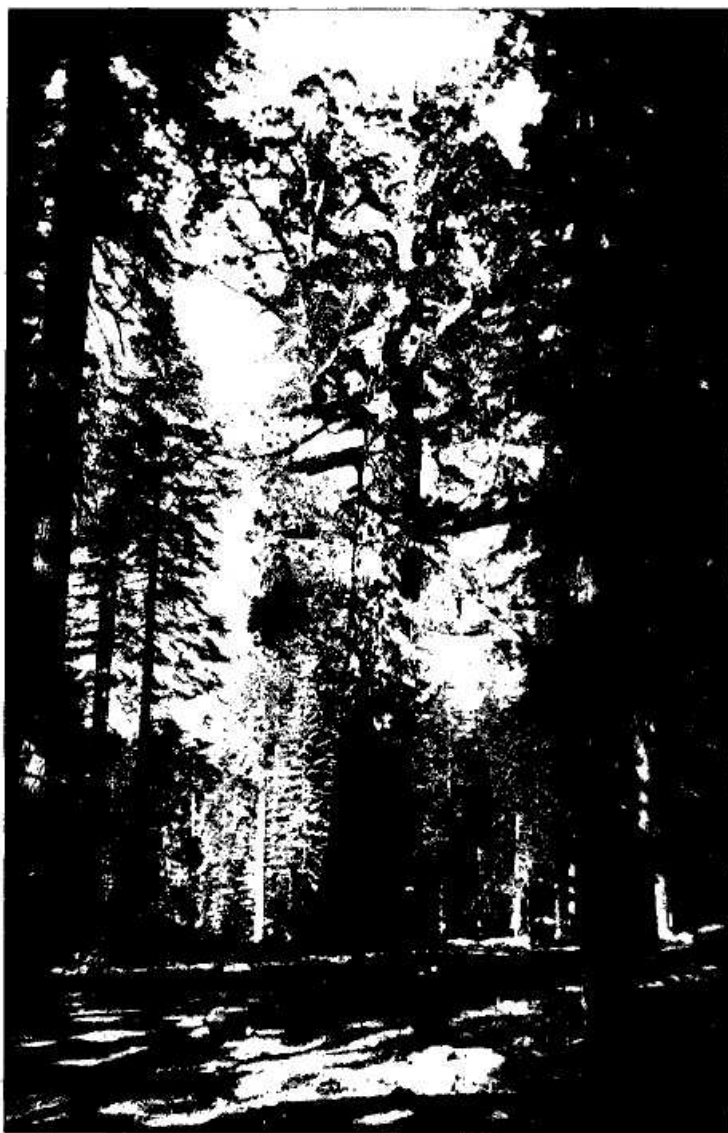
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**ABBOT KINNEY**

**FOREST  
AND WATER**



***Forest and Water.***



GRIZZLY GIANT

Height 234 feet; diameter 35 feet; lowest branch 100 feet from soil: Showing how this Species, Sequoia Gigantea, Dwarfs the other Magnificent Sierra Forest Trees

# # Forest and Water

BY

**ABBOT KINNEY**

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"Eucalyptus," "Conquest of Death," "Tasks by Twilight," Etc.

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With Articles on Allied Subjects

BY

EMINENT EXPERTS

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**ILLUSTRATED**

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## INTRODUCTION.

There is a notable lack of forest literature in the English language. Recent works on Forestry in English are the "Primer of Forestry," a public document and a most valuable work by the Government Forester, Mr. Gifford Pinebot, and a volume received by us, as this treatise is going through the press, entitled "North American Forest and Forestry," by Ernest Brucken. The circulation of other works has been inadequate to awaken any general interest. Yet in the Far West, forestry is closely related to the development and to the life of the country. The improvements and occupation of the vast empire of the arid public lands are dependent upon the preservation of the water-holding power of the forests on the mountains. These are the natural reservoirs.

In the Western Forests the prevention of torrents and the preservation of perennial water supply overshadow all other forest questions, except in the western part of Washington and Oregon and in North-western California. In these districts the timber supply is paramount. The rapid exhaustion of the Forests in other portions of the United States is forcing attention to this rich timber resource. It is a pleasing thing to note that the general tendency throughout this district is toward a more rational and scientific system of lumbering. There is plenty of room for improvement. The lumbering in these superb forests has been on most reckless and wasteful methods. The forests have been cut and burned without regard to the future, neglecting even present safety.

Sheep packing Forest land so that it sheds water and cannot absorb it is demonstrated by the practice formerly prevalent in Southern California of puddling and rendering the reservoir bottoms water tight by driving sheep into the excavations. This method was effective. From this we can perceive the effect of large bodies of sheep on watersheds. Fires diminishing water-holding power of mountain water sheds is well understood by all forest students. There is another effect that has been recognized in Southern California by a number of careful observers and carefully checked up. This is the cementing up of our torrent-cones by the ashes washed down from the mountains after fires. This detritus fills the interstices of the gravel and sand and

thus allows the water delivered to flow across and beyond the great natural reservoirs of our largest springs and streams. These are what we call the second tier springs. One of the largest of these is a tier of springs supplying the Los Angeles river and constituting the domestic supply of this large city and of the irrigated vegas to the south. Whenever a watershed is burned over we see the mountain streams extend their flow beyond the usual limits because of this channel cementing. Thus on a light rainfall we see streams flowing clear across the natural reservoir when without such fires only long and continuous rains produce this result. In this country it is a misfortune to have storm water flow off. We want it to sink in so that the perennial springs can be supplied. It requires a heavy flood rolling the gravel and boulders about to break these ash-cemented channels up so that they can again absorb the torrent flow. This is one of the serious dangers growing out of our mountain forest fires. The watershed fires affect the first tier of mountain springs disastrously. The reduction in permanent water flow from these springs by such fires is from one quarter to three-quarters of the regular supply. Comparing the flow from the Deer Creek Springs with water-shed unburned with springs on each side of it and on burned districts for the past two years of light rains we find a slight shrinkage in the Deer creek supply and a frightful shrinkage in the springs from the burned water sheds. The exact figures are: Burned watershed, Cucamonga Canyon—Ordinary flow, 210 miners' inches; after fire, reduced to 28 inches. Burned over and second growth again burned on Alder canyon—Former flow, 6 inches; after fire, 0—or absolutely nothing. Deer creek canyon, unburned, ordinary flow, 48 inches; in present dry year flow, 40 inches.

These and other cognate subjects on which I have extensive notes are more fully discussed in this volume under appropriate heads.

Tree planting in Southern California has been more general than in any district with which I am acquainted. The entire aspect of the country has been changed. The objects of the forest tree planting were for roads, wind breaks and fuel. At present the large eucalyptus groves have become valuable for piling. The leaves of the Eucalyptus are also used by several local establishments for the medicinal oil and for eucalyptol. These trees and the Acacias grow with wonderful rapidity and insure a fair fuel crop at seven years and a good one at ten years.

The Forest societies of the South have this year started to replant portions of the burned areas of the Sierra Madre with indigenous