

**EXPLORATIONS AND SURVEYS FOR
A RAILROAD ROUTE FROM THE
MISSISSIPPI RIVER TO THE PACIFIC
OCEAN. WAR DEPARTMENT. PART
III. BOTANICAL REPORT**

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Explorations and Surveys for a railroad route from the Mississippi river to the Pacific Ocean.
War department. Part III. Botanical Report by Various

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PART III.

EXPLORATIONS AND SURVEYS FOR A RAILROAD ROUTE FROM THE MISSISSIPPI RIVER TO THE PACIFIC OCEAN.
WAR DEPARTMENT.

ROUTES IN CALIFORNIA AND OREGON EXPLORED BY LIEUT. B. S. WILLIAMSON, CORPS OF TOPOGRAPHICAL
ENGINEERS, AND LIEUT. HENRY L. ABBOT, CORPS OF TOPOGRAPHICAL ENGINEERS, IN 1855.

BOTANICAL REPORT.

WASHINGTON, D. C.
1857.

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BY J. S. NEWBERRY, M. D.,
GEOLOGIST AND BOTANIST OF THE EXPEDITION.

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No. 1.

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BOTANIST OF THE EXPEDITION.

CHAPTER I.

GEOGRAPHICAL BOTANY.

INFLUENCES AFFECTING THE BOTANICAL CHARACTER OF THE REGION BETWEEN SAN FRANCISCO AND THE COLUMBIA.—LAWS CONTROLLING THE DISTRIBUTION OF SPECIES AT PRESENT NOT UNDERSTOOD.—NOVELTY OF BOTANICAL CHARACTER OF THIS REGION.—VARIETY OF ANNUAL PLANTS.—SMALL NUMBER OF TREES.—PREPONDERANCE OF CONIFERS.—CLIMATE.—GEOLOGICAL STRUCTURE.—LOCAL BOTANY.—COAST MOUNTAINS.—CLIMATE.—CAUSES AFFECTING IT.—VEGETATION.—FORESTS.—SHRUBS.—FERNS AND MOSSES.—SACRAMENTO VALLEY.—CLIMATE, CHARACTER OF SEASONS.—VEGETATION.—ITS ANNUAL CHARACTER.—TIMBER BELTS.—LOCAL BOTANY.—WILD OAT.—OAK GROVES.—SHRUBS.—TULE.—CHARACTER OF SOIL.—TIMBER BELTS AND THICKETS ALONG THE RIVER BANKS.—BOTANY OF SIERRA NEVADA.—ITS UNITY OF CHARACTER.—FORESTS.—LOCAL BOTANY.—ZONES OF VEGETATION.—ANNUAL PLANTS.—BOTANY OF THE DISTRICT EAST OF SIERRA NEVADA AND THE CASCADES.—UNIFORMITY OF VEGETATION.—SAGE PLAINS.—YELLOW PINE FORESTS.—LOCAL BOTANY.—BUNCH GRASS.—ANNUAL PLANTS.—BOTANY OF KLAMATH LAKE.—BOTANY OF THE DES CHUTES BASIN.—BOTANY OF THE CASCADE MOUNTAINS.—BELTS OF VEGETATION.—FORESTS OF WILLAMETTE VALLEY.

THE influences which have given character to the flora of the region lying between San Francisco and the Columbia, both as regards its botanical relations and the distribution of the plants which compose it, as in other countries, have been connected with its geological structure, its topographical features, and its climate.

To these causes, which are very appreciable in their action, and which have produced by far the most striking phenomena presented by the vegetation of the west, another should be added, that which has controlled the radiation of species from their original centers of creation.

The operation of this latter cause, though perhaps not less real, is far more obscure, requiring for its analysis an array of facts much greater than has yet been collected. This has, therefore, been entirely neglected, except in the few instances where plants are common to both sides of the continent, and an effort has been made to connect their eastern and western habits. When the botany of the west shall come to be known far better than at present, we may expect that the physiological laws which have controlled the distribution of plants may be studied with equal profit with the more material influences of which I have spoken.

At present any hypotheses in reference to them, however plausible they may appear, must necessarily involve so much uncertainty, that they should be regarded as speculations rather than generalizations of fact. And in the future, by whomsoever theories on this subject may be suggested, and whatever weight or personal influence may be thrown into the scale, that