

from NOTES ON THE FOREST FLORA OF JAPAN—II.

TRAVELERS in Japan have often insisted on the resemblance between that country and eastern America in the general features of vegetation. But with the exception of Yezo, which is still mostly uninhabited and in a state of nature, and those portions of the other islands which are above 3,000 feet over the level of the ocean, it is difficult to form a sufficiently accurate idea of the general appearance of the original forest-covering of Japan to be able to compare the aspects of its vegetation with those of any other country, for every foot of the lowlands and the mountain valleys of the three southern islands have been cultivated for centuries. And the foothills and low mountains which were once clothed with forests, and might be again, are now covered with coarse herbage (principally *Eulalia*) and are destitute of trees, except such as have sprung up in sheltered ravines and have succeeded in escaping the fires which are set every year to burn off the dry grasses. Remoteness, bad roads, and the impossibility of bringing down their timber into the valleys have saved the mountain forests of Japan, and these may still be seen, especially between 5,000 and 8,000 feet over the level of the sea, in their natural condition. But these elevated forests are composed of comparatively few species, and if it were not for the plantations of Conifers, which the Japanese for at least twelve centuries, it is said, have been making to supply their workers in wood with material, and for the trees preserved or planted in the temple grounds in the neighborhood of towns, it would be impossible to obtain any idea at all of many of the Japanese trees. But, fortunately, the priests of Buddha have planted and replanted trees for a thousand years about their temples, which are often surrounded by what now appear to be natural woods, as no tree is ever cut and no attempt is made to clear up the undergrowth. These groves are sometimes of considerable extent and contain noble trees, Japanese and Chinese, which give some idea of what the inhabitants of the forests of Japan were before the land was cleared for agriculture.

The floras of Japan and eastern America have, it is true, some curious features in common, and the presence in the two regions of certain types not found elsewhere, show their relationship. But such plants are usually small, and for the most part rare or confined to the high mountains. *Diphylleia*, *Buckleya*, *Epigaea* and *Shortia* show the common origin of the two floras; but these are rare plants in Japan as they are in America, with the exception of *Epigaea* [trailing arbutus], and probably not one traveler in ten thousand has ever seen them, while the chief elements of the forest flora of northern Japan, the only part of the empire where, as has already been said, comparison is possible—those which all travelers notice—do not recall America so much, perhaps, as they do Siberia and Europe.

The broad-leaved Black Oaks, which form the most distinct and conspicuous feature in all the forests of eastern America, are entirely absent from Japan, and the deciduous-leaved White Oaks, which, in Japan, form a large part of the forest-growth of the north, are of the European and not of the American type, with the exception of *Quercus dentata*, which has no

related species in America. The Chestnut Oaks, which are common and conspicuous, both in the northern and southern parts of eastern America, do not occur in Japan, and the Evergreen Oaks, which abound in the southern part of that empire, where they are more common than any other group of trees, are Asiatic and not American in their relationships. . . .



The illustration gives some idea of the general appearance of the great coniferous forests which cover the highlands of central Japan. In the foreground, Lake Yumoto, famous for its thermal springs, nestles 5,000 feet above the sea among the Nikko Mountains. The forests which rise from the shores of the lake are principally comprised of Hemlock (*Tsuga diversifolia*), among which are Birch (*Betula Ermanni*), *Abies* and *Picea*, *Pterocarya*, *Cercidiphyllum* and the Mountain Ash [*Sorbus*]. In the dense shade by the shores of the lake grow dwarf forms of the Indian Azalea, *Elliottia paniculata*, our Canadian Bunch Berry (*Cornus Canadensis*), great masses of *Rhododendron Metternichii*, which in these forests replaces *Rhododendron Catawbiense* of the Appalachian Mountains, the dwarf *Ilex rugosa*, *Clethra*, here at the upper limits of its distribution, *Panax horrida* [devil's club], and the dwarf Blueberries which inhabit mountain slopes in all northern countries, as well as the ubiquitous Bamboos.

The forests of the two regions possess in common *Magnolia* and *Aesculus* [horse-chestnuts], which are more abundant in species and individuals in America than in Japan. The *Rhuses*, or Sumachs, are very similar in the two regions, and so are the Witch-hazel and the arborescent *Aralia*. *Cornus macrophylla* [now *C. controversa*] of Japan is only an enlarged *Cornus alternifolia* [pagoda dogwood] of eastern America, and the so-called Flowering Dogwoods of the two countries are very much alike. The Japanese Walnut is very like the American Butternut, while, rather curiously, the Japanese *Thuja* [red cedar] and the two *Chamaecyparis*, the *Piceas* [spruce] and *Abies* [fir], resemble species of Pacific North America, a region whose flora has little affinity with that of eastern Asia. *Torreya* is common to the two regions; in America it is one of the most local of all our trees, while in Japan it is abundant in the mountainous regions of the central and southern parts of the empire.

Apart from the characters which distinguish related genera and species of Japanese trees from their American congeners there are many aspects of vegetation which make the two countries unlike. The number of broad-leaved evergreen trees is much greater in southern Japan than it is in the southern United States, there being fifty species of these trees in the former, and only twenty in eastern America (exclusive always of southern Florida), and the general aspect of the groves and woods at the sea-level, even in the latitude of Tokyo, is of broad-leaved evergreens. The number of evergreen shrubs in proportion to the entire flora is much greater in Japan, too, than it is in America, and plants of this character grow much further north in the former than in the latter country. The small number of species of *Pinus* in Japan, and their scarcity at the north, is in striking contrast to the number and distribution of this genus in eastern America, where there are thirteen species, to only five in Japan (including one shrub). In Japan the Hemlock forms continuous and almost unbroken forests of great extent on the mountain-slopes, which are over 5,000 feet above the sea, while in eastern America this tree is rarely found except scattered in small groves or as single individuals through the deciduous-leaved forests. . . . The wild Grape grows in the damp forests of Yezo with a vigor and to a size which the American species do not attain, even in the semi-tropical climate of the southern Mississippi valley. *Actinidia arguta* climbs into the tops of the tallest trees, and nothing is so un-American or so attracts the attention of the American traveler in Japan as the trunks of trees clothed to the height of sixty or eighty feet with splendid masses of the climbing *Hydrangeas* (*H. petiolaris* and *Schizophragma*), or with the lustrous evergreen foliage of the climbing *Evonymus*. *Wistaria* is represented, it is true, in eastern America, but here it is nowhere very common or one of the chief features of vegetation as it is in Japan; and the Ivy, a southern plant only in Japan, and not very common, helps to remind the traveler that he is in the Old and not in the New World.

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