

often forming only dense thickets interwoven with numerous Convolvulaceæ and climbing grasses. The hornbeam\*, lime, willow, and cornel are met with in these forests associated with a host of noble trees of the Laurineæ. Above 7000 feet oaks gradually decrease, being replaced by pines; and at elevations of 8000 to 10,000 feet they are only found scattered among the pines. Among the species here are *Quercus spicata*, *Q. reticulata*, *Q. chrysophylla*, and *Q. pulchella*. Most of the epiphytes and parasites of the lower regions have disappeared, though some species of *Viscum* still abound. Mosses and lichens become plentiful, and *Usnea barbata* hangs in festoons from the branches, replacing *Tillandsia usneoides* of the warmer zones. But oak-vegetation does not entirely cease on the peak of Orizaba below an altitude of 12,000 feet.

During the last 350 years there has been an enormous destruction of the oak-forests, especially in the States of San Luis Potosi, Guanajuata, and Oaxaca, where the wood was largely used for smelting silver.

The oak-vegetation of the Northern States of the interior of Mexico is rich in species, but almost all the trees are low and stunted—often only shrubby, and not forming forests, but occurring in scattered groups on the steep mountain-flanks. They are found chiefly at elevations of 6000 to 8000 feet, often completely covered with *Tillandsia usneoides*.

As an example of the large number of species found in a small area on the arid mountains of the interior, Liebmann enumerates twenty-two observed by him in the silver-mine district of Real del Monte; and he adds that the same species inhabit all the mountains of the interior from Zacatecas to Oaxaca. In the eastern valleys of Oaxaca the oak descends to an elevation of a few thousand feet only. Among the species found are—*Q. salicifolia*, *Q. tomentosa*, *Q. petiolaris*, and *Q. skinneri*; the last also inhabits the western side of Guatemala. On the higher peaks of the Cordilleras of Oaxaca, as Sempoaltepec, Pelado, and Cumbre de Ocote, some species ascend to elevations of 10,000 to 11,000 feet, where they form stunted shrubs two or three feet high.

The western cordilleras of Mexico, like the eastern, have their oak-forests, but they are far from being so fine, in consequence of the dryness of the climate; and they have not been so fully explored.

In North-western Mexico Seemann collected thirteen species of *Quercus*; and he states† that the first evergreen oaks were met with at an elevation of 1500 feet above the sea-level (ascending from Mazatlan), but that the increase of the number of the species as well as that of individuals was rapid, and at about 3000 feet they were associated with some Coniferæ and a rich mountain flora

\* Perhaps the hop hornbeam (*Ostrya*) is intended here, for we have seen no specimens of *Carpinus* from Mexico, though the common North-American species has been recently discovered in Guatemala.

† Botany of the Voyage of the 'Herald,' p. 263.