SOME COMPARISONS OF THE LICHEN FLORAS OF EURASIA AND NORTH AMERICA

By R. Heber Howe, Jr.

In studying many of the filamentous and foliose lichen-species of North America I have been struck with the interesting correlation of species-distribution found on the two continents of North America and Eurasia. This correlation is so often overlooked, that new varieties and even species are being described without a sufficient study of the distributional problems that present themselves, though as Dr. Darbishire has pointed out, these species may be "alike only in their external morphology," and "may have been separately derived from some common ancestor." It, nevertheless, should make one wary of describing new species even if excused by any such theoretical probability.

That the lichen flora of western Europe and the western coast of North America is closely allied,—as that of eastern Asia and eastern portions of the United States is, in some striking instances, at least undeniable. I am told that the same analogy is apparent in other groups, *i. e.*, the mosses.*

Climate, Elevation, Etc.

There are evidently several underlying causes that develop lichen species; just what these are, and their relative importance, is still to be explained. We have climatic conditions, the three most important factors of which for lichens, as for all plants, are moisture and sunlight, and the variability of temperature due to elevation or latitude. The character of the soil (of no concern in the species here discussed) plays, no doubt, an important rôle. The proximity of the sea also, it would seem, has a definite influence. All of these factors, however, fail, it appears, to explain entirely the curious occurrence of a given species on both continents. A combination of them all is more likely the answer.

[* Gray, Hooker and many recent writers have discussed the well-known relationship of the flora of eastern Asia and eastern North America. See Torreya for January 1914, p. 8.—Ed.]

In a recent paper by Dr. Darbishire* on Arctic flora, a most interesting and enlightening comparison of Arctic species with those of Germany is made, showing that the advance and retreat of the ice age explains a remarkable distribution, which results in 72.3 per cent. of Arctic lichens being found in the Tyrol. A conclusion, that the crustose species are of a later evolutionary development than the fruticose, is also brought forward by means of comparison of the two floras.

A few examples taken from the *Usneaceae* show the correlation that I have in mind, and which at a later date I hope to be able to take up in more detail.

Genus: Usnea

U. plicata (L.) Web. I have before me examples of *Usnea plicata* from the Alps which are practically as robust as those from the Californian coast, and are impossible to separate if the labels are withheld. These Californian plants have been described as representing a new species, *i. e.*, *U. californica* Herre. This species was considered by Dr. Zahlbruckner to belong to the series *Pachynae*, but in reality it is a *Mesinae*, a point in which Dr. Zahlbruckner now agrees with the author.† Dr. Herre was perhaps mislead by this belief when he described the species.

U. articulata (L.) Hoffm. Though this species is never well developed in our area, it is found only on the Californian coast. It is of course a well marked species in the British Isles.

Genus: Letharia

L. vulpina (L.) Ach. This plant occurs throughout northwestern United States, reaching in California perhaps, a slightly more robust development (*i. e.*, *L. vulpina* var. *californica* Nyl. = *L. columbiana* Nutt.) and is an exactly parallel case with *U. plicata*.

* Rept. 2d Norwegian Arctic Exped. "Fram," 1898–1902, Videns. Sels. I Krist. 51–53. 1909.

† In litt. Sept. 9, 1913, "Die *californica*, deren Originale exemplar bei mir erliegt ist eine echte *Pachyna*." In litt. Feb. 2, 1914, "Darin haben Sie recht, dass *Usnea californica* nicht zu des *Pachynae* gehort."

L. thamnodes (Flot.) Hue. This species shows that the eastern Asiatic distribution is in this case parallel with that of eastern United States. *L. thamnodes* is not known from west of the Mississippi and is now considered synonymous with *Evernia mesomorpha* Nyl. from eastern Asia.

Genus: RAMALINA

Ramalina fraxinea (L.) Ach. This species (typica) is unknown from our area except on the Pacific coast, and we have small argument to distinguish it from the common *R. Mensiezii* Tuck.,— in fact unlabelled material from the coast of France is in many cases impossible of separation (see Bryologist 17: 20–22. 1914).

R. Duriaei (DeNot.) Bagl. This plant occurs only in southern California and appears again on the southeastern Atlantic coast of Europe.

R. calicaris (L.) Fr. emend. (= *scopulorum*). The only representative of this species-group is the occurrence in Alaska of *R. subfarinacea* Nyl.

Genus: ALECTORIA

A. Fremontii Tuck. This species, known only from western North America, is no longer a unique representative of our area, as it is now well known from Scandinavia and even France.

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A POSSIBLE HABIT MUTANT OF THE SUGAR MAPLE (ACER SACCHARUM)*

BY A. F. BLAKESLEE

In the summer of 1911 while on a collecting trip near Binghamton, N. Y., the writer's attention was attracted to a single tree in a distant row of sugar maples. Its strikingly regular outline suggested either that it had become overgrown by a vine or had been artificially trimmed to suit the whim of some topiarian artist. A closer approach and inspection, however,

* Contribution from the Department of Genetics, Connecticut Agricultural College.