

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.

showed that neither supposition was correct. Moreover, the owner of the farm upon which the tree was growing, Mrs. Lucy A. Burbank, gave the information that the tree in question had been planted by her husband somewhat over 30 years previously, together with the other trees seen in the row (Fig. 1). The exact source of the young trees could not be given but, when planted, all were supposed to be normal sugar maples. It had early shown its peculiar form and most people who had seen it insisted it had been kept trimmed, but such was not the case. A comparison with the adjacent trees of the same age would indicate that its growth had been relatively slow. At the time the photographs were taken, its height was about 32 ft. and the diameter of the trunk at breast height was 9 inches. For comparison it may be stated that the height of the first tree to the right of the one in question is about 43 ft. and has a trunk diameter of 15 inches.

The limbs are slender and branch profusely to form a close thicket of slender branchlets which end at a nearly uniform distance from the trunk. By the shortness of the petioles of the outer leaves and the progressive elongation of the petioles of those toward the base of the season's growth, the foliage is formed in a dense, even thatch which, in connection with the regularity of the skeleton, produces an appearance similar to that of a symmetrical arbor vitae. So far as can be seen, the habit of growth alone is peculiar, for the individual leaves and winter twigs are like those of normal sugar maples.

Scions have been sent to the New York Botanical Garden and to the Arnold Arboretum. Successful grafts onto normal stock have been obtained at the latter institution as well as in the Botanic Garden of the Connecticut Agricultural College. Without doubt the tree will hold its peculiarity of growth when propagated vegetatively as have other form varieties of maples such as the fastigiata sugar maple (var. *monumentale*) which has the aspect of a Lombardy poplar.

A short note describing this habit variant of the sugar maple was presented at the Washington meeting of the Botanical Society of America, 1911, and an abstract of this note was given in

Science, Jan. 26, 1912. Since then two trees of somewhat similar appearance have been brought to the writer's attention.

Under date of Jan. 29, 1912, Mr. J. N. Prouty of Humboldt, Iowa, writes: "We have in this town what I presume is a dupli-



FIG. 1. Summer and winter view of possible habit nutant of sugar maples.

cate of your tree. . . . The tree is more than 40 years old, the stem about one foot in diameter, and more than 30 feet in height

though it has the appearance in the picture of being a shrub. It was transplanted with many others of the same variety to a gravelly ridge where it made a slow growth—slower than the one to the right which is of the same variety and transplanted at the same time.” A colored photo postal sent shows a bushy tree of regular outline much broader than the one pictured in the present article. Those “of the same variety” in the row are obviously normal sugar maples.

Mr. L. S. Hopkins, of the Peabody High School, Pittsburg, Pa., after examining photographs sent him, writes concerning a tree discovered in Wayne, Co., Ohio: “Although of a slightly different type, I think my tree is exactly the same. . . . The tree is not an unusually large one but rather undersized. However, the shape is such that every one who sees it for the first time thinks it has been trimmed into its present form but so far as I have been able to find out it has never been touched.”

The three trees discussed, in addition to their regularity of outline, show in common a relatively slow growth. The wide separation of the localities where they are found would indicate they had originated independently. It is possible that individual trees of similar habit may be found in other localities. If so, the writer would be glad to have them brought to his attention. The form, however, is so unusual in a deciduous tree and so conspicuous from a distance that it is improbable they could escape notice, even of a layman. Their occurrence therefore must be extremely rare. Moreover, Prof. C. S. Sargent has kindly examined photographs of the tree from Binghamton, N. Y., and informs the writer that no occurrence of a sugar maple with any such habit of growth has been reported or is known in the literature.

Fruit has not been obtained from any of these three trees and the writer has been unable to visit the tree at Binghamton during the flowering season. In consequence no experiments have been undertaken to discover how the peculiar form is inherited in sexual reproduction. That the peculiarity is an inheritable character and not a mere environmental modification is presumable from the association of the abnormal forms with

normal trees acting as controls under similar growth conditions. The term mutation may be conveniently applied to the sudden appearance of an inheritable peculiarity, whether due to an immediately preceding change in the germ plasm or to the rare kaleidoscopic combination of unit characters already present. The form variant of the sugar maple here described therefore, may be provisionally classed as a mutant.

A CLASSIFICATION OF BOTANICAL SCIENCE IN TWO DIMENSIONS

BY ROLAND M. HARPER

The classifications of knowledge relating to the vegetable kingdom which one finds in encyclopedias, text-books, library manuals, etc., usually arrange the ultimate units in a linear sequence (a space of one dimension), and almost necessarily so, for the parts of a written or spoken discourse, such as a lecture course, are consecutive rather than simultaneous. But a classification of science, books, plants, life-zones, or anything else, that has but one dimension can not as a rule place all the units in their proper relation to each other, for in a linear sequence each unit can be adjacent to not more than two others.*

An ideal classification should have several dimensions, but any system represented on a sheet of paper or other plane surface is limited to two. This answers fairly well for classifying sciences, though, for it allows us to classify them by subject matter and by point of view at the same time.

The subjoined table represents a crude attempt to arrange the botanical sciences in two dimensions. The columns represent the objects studied, and the horizontal divisions the points of view or methods of investigation. The columns form a regular series of increasing complexity, from vegetable matter in general to plant associations; but there is no such simple relation between the horizontal rows, and if a third dimension were available the points of view might advantageously be grouped in two dimensions instead of one, so as to bring the study of environment,

* One of the latest and most elaborate linear classifications of pure and applied botany is that of Harshberger in *Science*, II. 36: 521-525. Oct. 18, 1912.