

ARNOLDIA



A continuation of the
BULLETIN OF POPULAR INFORMATION
of the Arnold Arboretum, Harvard University

VOLUME 18

APRIL 11, 1958

NUMBER 2

TWO NEW *MAHOBERBERIS* HYBRIDS

TWO new *Mahoberberis* hybrids have been growing in the Arnold Arboretum since 1948 when they were first obtained from Sweden. These are decidedly different, one from the other, but apparently both have possibilities as ornamental broad-leaved evergreens in those northern areas where *Mahonia aquifolium* proves hardy. They have been growing out-of-doors during most of this period, without special winter protection. They have neither flowered nor fruited, but appear sufficiently interesting for their foliage alone, to be a welcome addition to the all-too-small group of broad-leaved evergreens suitable for northern planting. It must be said that one of the parents, *Mahonia aquifolium*, though twig hardy in many northern gardens, does have foliage injury in late winter, especially if grown in the full winter sun, and such may also be the case with these two new hybrids. It is recommended that both of these be planted in situations where they have some winter shade. After further trials in various parts of the country, we will know more about their hardiness limits than we do at present.

Mr. Holger Jensen of Ramlosa, Sweden, noticed these first in 1943 as new hybrid seedlings and reported them in a Swedish publication, but did not describe them, and in 1948 sent over two small plants of each to the Arnold Arboretum for trial. In 1950, Mr. Gert Krüssmann, Curator of the Dortmund-Brüninghausen Botanical Gardens in Germany, prevailed upon Mr. Jensen to send him photographs and a few twigs from the hybrids, and it was from these that Mr. Krüssmann prepared the first foliage sketches and description of these plants, published in his *Deutsche Baumschule* (Vol. 2: 12, pp. 300-301, 310) for December 1950.

The United States Department of Agriculture passed rigid regulations in 1918 (Federal Quarantine No. 38) concerning the shipment of certain plants including *Mahonia*, *Mahoberberis*, and *Berberis*, which were known to carry the serious black stem rust of wheat, and these restrictions have been added to repeatedly since that time. Lengthy experimentation on the part of the Wheat Rust Labo-

ratory, Plant Pest Control Branch of the U.S. Department of Agriculture, has resulted in its releasing certain species which are sufficiently resistant to the disease to be safe for interstate shipment. Since these two new *Mahoberberis* species showed promise of becoming good evergreen ornamental specimens for planting in northern gardens, the Wheat Rust Laboratories were asked in 1953 whether they were susceptible or immune.

It was not until the fall of 1956 that final word was received by the Arboretum that these species were resistant, and hence could be propagated and shipped interstate **with a permit**. Consequently, they were then propagated and are scheduled for release this spring under special permit to a dozen firms who have agreed to cooperate in the Arboretum's program of introducing new plants. A ten-year period between the time of actual introduction into the country and release for commercial propagation is lengthy, indeed. Considering this time lapse, one can easily become envious of those who breed annuals, for with these fast-growing plants, thousands of seeds can be available in a few years' time for generous distribution.

Not so the *Mahoberberis*. Neither of these two plants has flowered nor fruited in the Arnold Arboretum up to this time. They are reproduced entirely from cuttings taken in the early fall. *Mahoberberis aquicandidula* is the more difficult of the two to root, and at the same time, is the less attractive of the two, probably because it does not have as large or as many leaves, nor does it grow as dense.

The first cross between *Berberis* and *Mahonia* was *Mahoberberis neuberti* which originated in France in 1850. This is a rather dull-leaved specimen, is susceptible to the black stem rust of wheat, and hence is not allowed free shipment in America. For all intents and purposes, as far as ornamental shrubs are concerned, we can do without it. As far as is known, *M. aquisargenti* and *M. aquicandidula* were the next crosses described (1950); and more recently, a third has been reported to have originated on the Pacific Coast, *M. miethkeana*, described in 1954.

Mahoberberis aquicandidula.—The plants we imported originally are still only two feet tall and are supposed to be a cross between *Mahonia aquifolium* and *Berberis candidula*. The leaves are arranged alternately on the stem; they are simple and an inch to an inch and a half in length, with approximately three to five sharp prickles on each side of the leaf and a very few weak stipular thorns about one-quarter inch long. The leaf texture is leathery, glossy and evergreen, and the petiole in most cases is very short, about an eighth of an inch in length. There is not nearly as much variation in the leaves of this plant as there is in those of *M. aquisargenti*.

Mahoberberis aquisargenti.—These plants, reputedly a cross between *Mahonia aquifolium* and *Berberis sargentiana*, are not over three feet in height, but appear to be much more vigorous and upright of the two species and make the better landscape specimens, primarily because of their more dense habit of branching. These branches are decidedly upright and the leaf margins are very spiny, although the branches are practically devoid of stipular thorns. These plants bear



PLATE II

(Top: left) *Mahoberberis aquicandidula*; (right) *Mahoberberis aquisargenti*.
(Bottom) *Mahoberberis aquisargenti* (7 years old).

some compound leaves on older wood, usually with a major terminal leaflet about three inches long, and two basal leaflets about half that size or even less. Then there are simple leaves about the same size and general shape as the terminal leaflet in the compound leaves; others that are shorter and wider; and still others, especially on young vigorous shoots, only about two inches long but with five or six very pronounced spines on each leaf margin. In the fall, the leaves take on a bronze color and keep this most of the winter, although it must be admitted that if the plant has full sun in the winter, the leaves may become brown by February. Consequently, some winter shade should prove helpful. Spines on the younger leaves are nearly four times the length of those on the compound leaves and may be as much as one-half inch long. This great variation in leaf size and form, certainly shows the influence of both parents, but all leaves are glossy with a leathery texture and are evergreen a greater part of the winter if given some shade.

These plants have been growing in our nurseries at the Case Estates in Weston for the past five years. They are growing with rhododendrons, azaleas, and other young evergreens in a small area surrounded on the exposed sides by a tall evergreen windbreak. It must be admitted that one of these years when the temperature went to -20° F. the leaves were browned somewhat and dropped. However, smaller plants set out in the frames seem to come through the winters in fine condition with no protection other than a few pine boughs.

As for hardiness, we have found that *Berberis sargentiana* is the more tender of the two parents. It has been killed back several winters recently and almost killed out completely. It has been listed by Rehder as hardy in Zone VI and many plants listed in this zone are not reliably hardy in the Arboretum. *Mahonia aquifolium*, on the other hand, is able to do well in this area except in the most exposed places where winter winds and sun can be expected to burn the foliage.

Mahoberberis miethkeana was first described by L. W. Melander and G. W. Eade in 1954 (*The National Horticultural Magazine*, 33: 4, pp. 257-260). Henry O. Miethke, the proprietor of a nursery near Tacoma, Washington, stated that he had found it in 1940, growing in a group of *Mahonia aquifolium* seedlings. This hybrid also was found resistant to the black stem rust of wheat by the Plant Pest Control Branch of the Agricultural Research Service, U.S. Department of Agriculture. The Arnold Arboretum was able to obtain a small specimen of this plant through the efforts of Brian O. Mulligan, Director of the University of Washington Arboretum, on July 14, 1954. Since that time, it has been growing in the same location in our nurseries with the other two *Mahoberberis* and is proving surprisingly similar to *M. aquisargenti*. However, *M. miethkeana* has produced a few small, yellowish to cream-colored flowers, and small black fruits apparently devoid of viable seed; but we have yet to find flowers or fruits on the two new hybrid species, although their failure to bloom could well be due to the heavy cutting the original plants have been subjected to for propagation purposes.

DONALD WYMAN