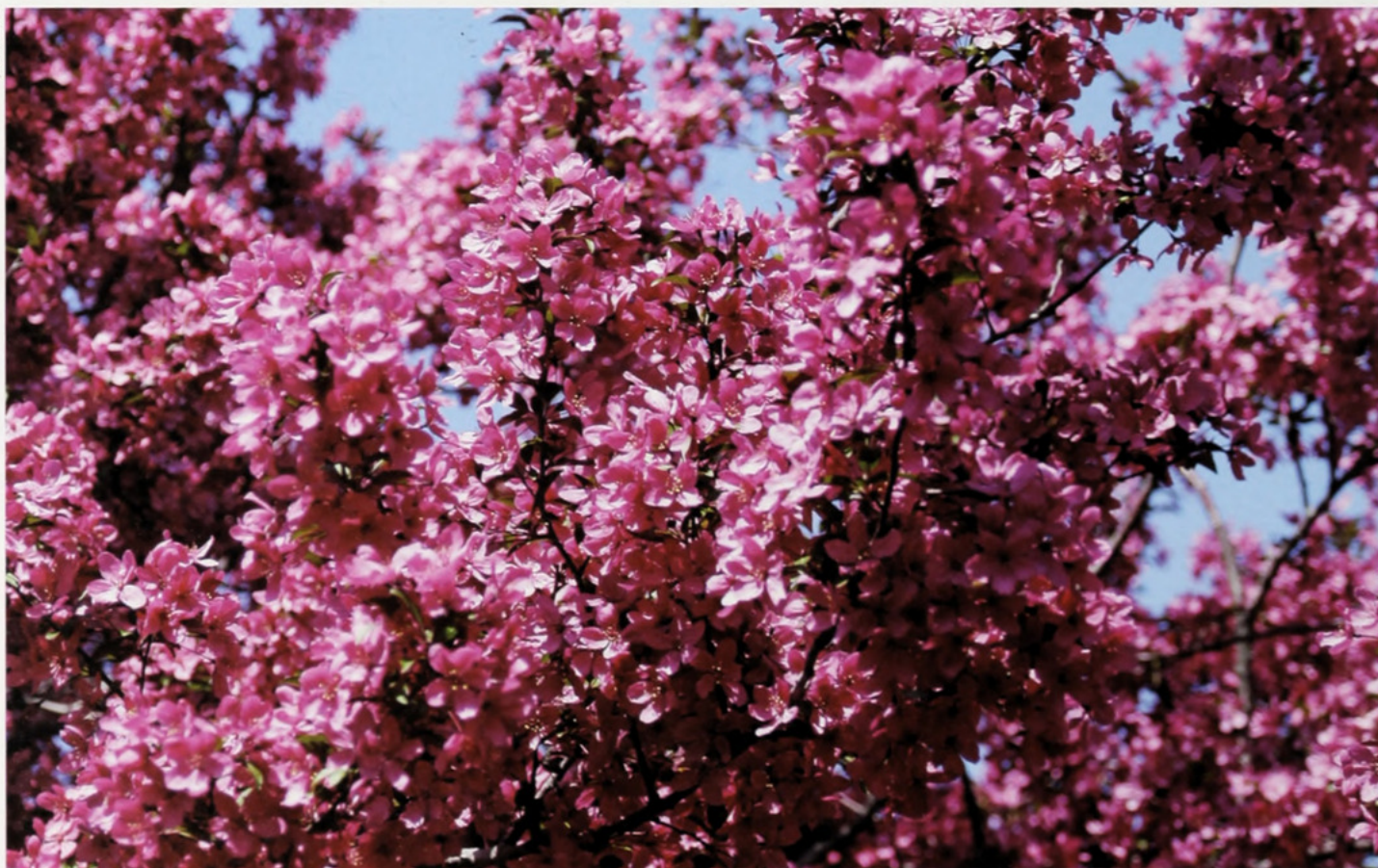


NANCY ROSE



The form of weeping crabapple 'Red Jade' outlined in snow.

JEFF ILES



The pinkish-red flowers of 'Prairifire' crabapple.

What about weeping crabapples? Real or imagined, several barriers stand in the way of using weeping trees in the landscape. For starters, consider the word “weeping.” Who wants a sad landscape? Secondly, trees like weeping willow and weeping mulberry have, albeit unfairly, caused many weekend gardeners to be wary of any plant with cascading branches. Finally, and perhaps most importantly, weeping trees can be very difficult to integrate into the landscape. They vie for attention when used in groupings and look awkward and forlorn if used as a solitary specimen in the middle of a large lawn. And sticking one smack dab in the center of that unnatural-looking berm in your front yard isn’t the answer either. But when classy, weeping crabapples like ‘Louisa’ and ‘Huber’ (Royal Fountain®) come along, we are obliged to find them a prime location in the landscape where they can be viewed and appreciated at any time of day and throughout the year, especially during the winter months. Positioning a weeper at the corner of a home, near a water feature, atop a terrace, or at the end of a shrub border will gain approving looks from visitors and neighbors alike.

Finally, consider a crabapple’s ability to stop you in your tracks as you stroll through the landscape. If you’ve ever seen ‘Prairifire’ awash in bright pinkish-red flowers, ‘Doubloons’ sporting a bumper crop of golden-yellow fruit, the handsome purple cutleaf foliage of ‘JFS-KW5’ (Royal Raindrops®), or the memorable silhouette of weeping ‘Red Jade’ encased in a glittering mantle of ice, well, you know what I mean.

Still, there are some who can’t be convinced crabapples are anything but disease-prone, messy trees. And in all honesty, this anti-crabapple mindset is probably a good thing. I mean, what kind of crazy world would it be if everyone began planting crabapples? See you at the garden center.

Resources

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NANCY ROSE

Delicate pink flowers flow along the weeping branches of ‘Louisa’.

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Malus at the Arnold Arboretum: An Ongoing Legacy

Michael S. Dosmann



NANCY ROSE

Malus in bloom on Peters Hill, the Arnold Arboretum, May 2008.

In his book *Flowering Crabapples: The Genus Malus*, the late Father John Fiala (1994) states that "no horticultural institution did as much for introducing and discovering new species, varieties, or special clones [of *Malus*] as did the Arnold Arboretum." Those are humbling words coming from such an authority as Father John. As I considered his accolade, I asked myself: What were the drivers that made this all possible?

No doubt there were a number of factors involved in making the Arnold Arboretum "the 'mother arboretum' for flowering crabapples" (Fiala 1994). Timing played a critical role in the initial development of the crabapple collection as well as its ongoing use and development. The Arboretum's founding in 1872 and early rapid expansion of collections coincided with vigorous plant exploration efforts around the world. With respect to *Malus*, countless taxa new to science were collected from the wild and described, while many others new to North America were introduced from cultivation else-

where (primarily Europe). Additional introductions of taxa from varying parts of their native ranges ensured that a high degree of genetic variation was present.

Simply having a diverse and sizeable collection of crabapples does not necessarily make it significant, however. The collection's active use in science throughout its existence put it on the map. Early on, the *Malus* collection was notably used in the study of taxonomy—the description of new species and their classification. This was followed by the collection's incorporation into better understanding genetics and cytology, as well as physiology. The collection proved to be of value to applied horticulture as well. Following World War II, as the demand for greater diversity of high-quality landscape plants increased, the products of these plant-breeding efforts (novel hybrids and cultivars) were grown and evaluated at the Arboretum.

Development and scientific use of the collection was made possible by a number of prominent Arboretum personalities. Charles S.



ARNOLD ARBORETUM ARCHIVES

Famed plant explorer Joseph F. Rock made this image of *Malus transitoria* on an expedition in Kansu (Gansu) province, China, on October 21, 1926.

Sargent, first director of the Arboretum, knew the research value of a well-documented collection and ensured that the initial development of the Arboretum, including its growing repository of apples and crabapples, would get off on the right foot. He also recognized that Rosaceae was indeed too large a family to occupy its allotted space—the hillside currently known as State Lab Slope near the Forest Hills Gate—which was dictated by the Arboretum's design based on the Bentham and Hooker sequence of plant families. And so, at the end of the nineteenth century, he designated large expanses on Peters Hill for the cultivation of *Pyrus*, his beloved *Crataegus*, and of course *Malus*. The expansion provided much relief, as numerous new species, hybrids, and cultivars were rapidly being introduced and needed space. Sargent himself collected and introduced new *Malus*, including the low-growing *M. sargentii* and the lesser-known but highly ornamental *M. tschonoskii*, both from his 1892 trip to Japan. Amazingly, the original specimens of these two species, now nearly 120 years old, still grow near

the Bradley Rosaceous Collection and represent the Arboretum's oldest *Malus* accessions.

Ernest H. Wilson also played the role of explorer and introducer. *Plantae Wilsonianae* credits Wilson with collecting from some 16 *Malus* species during his travels in China, several of which were taxa new to science. Perhaps the best of these is *Malus hupehensis*, the picturesque small tree with a vase-shaped habit that Wilson made numerous collections of during both his Veitch and Arboretum expeditions. In describing its merits, Wilson (in Sargent 1913–1917) notes that “it is very beautiful in spring when covered with light pink flowers, and resembles at this time a flowering cherry rather than an apple tree; the effect of the flowers is heightened by the purple calyx and the purplish tints of the unfolding leaves.”

Alfred Rehder, Arboretum taxonomist, may not have collected and introduced material from the wild, but he certainly applied his shrewd skills of observation and classification in describing and naming scores of the new *Malus*



Malus floribunda on Peters Hill, photo by Ralph W. Curtis, May 10, 1922.



The lovely pink flowers of *Malus hupehensis*.



One of the original *Malus* 'Mary Potter' (181-52-B), planted in 1952.

species and countless infraspecific taxa and hybrids. Hybrids within *Malus* are quite common, and as the Arboretum's collection grew and diversified, genes began to mix, hybrids arose, and more discoveries were made.

Perhaps the most ardent scientific user of this botanical petri dish was Karl Sax, former Arboretum director and research scientist at the Bussey Institute. Through the course of much of his Arboretum career, he integrated the Arboretum's *Malus* collection into a wide array of studies ranging from polyploidy and apomixis (Sax 1959) to plant physiology (Sax 1957). A byproduct of his many cytology and breeding experiments was an abundance of hybrids, from which Sax was able to evaluate and select a number of crabapple cultivars (Sax 1955). Four prominent ones are 'Blanche Ames', 'Henrietta Crosby', 'Henry F. du Pont', and 'Mary Potter'. The latter is perhaps his finest introduction and a personal favorite of mine. 'Mary Potter'—a cross between *M. sargentii* 'Rosea' and *M. x atrosanguinea*—is low-growing yet spreading, producing an abundance



In this 1959 photo by Heman Howard, Karl Sax is seen with a grafted dwarf apple tree, one of his many research interests at the Arboretum.

of single white flowers in the spring and bright red fruit in the autumn. Making the story all the more interesting is that it was named after the daughter of C. S. Sargent, and has the Sargent crabapple as a parent.

A *Malus* Mystery

Old, robust collections like the Arnold's are always full of new surprises. An interesting story concerns two unusual trees growing on Peters Hill, AA 691-52-A and B. While a Putnam Fellow in the spring of 2001, I became enamored by their wide-spreading, low-branching form; 691-52-B, the slightly larger of the two, stands 18 feet (5.5 meters) tall and 33 feet (10.1 meters) wide. The leaves and flowers are borne in dense, tight clusters throughout the canopy, giving the two specimens an unusual cloudlike appearance. The flower buds are magenta at first, and then transition into light pink before they open into creamy white blooms. The tag read simply "*Malus* sp." so I figured the trail was cold and that nothing more could be found about these plants.

However, hidden away in the records was the note: Sax 7841. "Sax Numbers," as these were known, were remnants of Karl Sax's own accessioning system at the Bussey Institute and referenced his research plants or crosses (this one being the 78th plant or cross of 1941). But unfortunately, no additional documentation had ever been found that

explained the numbers further, such as source of material, what the parentage had been if it was a cross, or what the understock or scions may have been in one of his experiments. Another seeming dead end, I gave up on pursuit of this additional information.

Nearly a year later, though, while rummaging through the archives, I stumbled upon an unknown notebook of Sax's that turned out to be his master list of hybrids and experimental units. With this fortunate find, I was able to identify not



The mystery crabapple: *Malus* 691-52-A.

only these two plants but also a great number of other hybrid *Malus*, *Forsythia*, *Prunus* and other genera. It turned out that the duo in question were hybrids that Sax had made between *M. lancifolia* and *M. sylvestris*. Although I do not know if it was his original intent when making the cross, he used these hybrids in a rootstock experiment, possibly to examine any potential dwarfing effects rootstocks can have upon the scion above. Two seedlings of Sax 7841 were the ungrafted individuals I was struck by (691-52-A and B), while 780-52-A and D, located westward and up the hill a bit, were grafted plants that had Sax 7841 as the understock and an unknown wild apple as the scion (his notebook did not provide that detail, alas). Although Sax's cross yielded an unusual plant with ornamental habit, it would be premature to introduce it as a cultivar without further evaluation. And so, in 2007, Arboretum propagator Jack Alexander grafted budwood from both plants of 691-52 onto numerous seedlings of *Malus* 'Antonovka'. Soon these trees will be planted and further evaluated for potential selection and introduction.

While Sax may have been the creator of many of the cultivars, it was Arboretum horticulturist Donald Wyman who was their biggest promoter. He lauded their merits throughout the pages of *Arnoldia* and in his books, and advocated for their use in his lectures and correspondence. And, like Sargent before him, Wyman tapped his extensive global horticultural network to distribute Arboretum selections as well as acquire new taxa to grow and evaluate. In honor of Wyman's dedication to crabapples, the Arboretum introduced *Malus* 'Donald Wyman' in 1970 to honor him in his retirement. A fantastic selection, it is appreciated for its abundant white flowers in the spring, relatively high disease resistance, and very long-lasting display of brilliant red fruit from autumn through winter. Interestingly, this tree was actually a spontaneous seedling that was first recorded growing on Peters Hill on March 20, 1950. Due to its aesthetic appeal, it was later accessioned and then selected and introduced as the cultivar known today; the original tree still stands. It is ironic that, despite the great efforts of breeding and selection made over the years, the Arboretum's most important crabapple introduction to date must be chalked up purely to serendipity.

Although the period from Sargent to Wyman may have been known as the "Golden Era for Crabapples" at the Arboretum, work in the collection did not end when Wyman retired. As the Arboretum shifted the focus of its collections policy towards acquisitions of known wild origin in the 1970s and 1980s, novel germplasm from Asia again crossed the threshold.

For example, the 1980 Sino-American Botanical Expedition yielded several fascinating collections, including an unusual southern provenance of *M. baccata*, the Siberian crab, found in Hubei province. In addition to its unusual collection site, this collection (SABE #1298) produces flowers and fruits borne on particularly long pedicels (Spongberg 1991). An amazing trio of this accession, AA 1843-80-D, H, and I, each with outstanding spiral-grained bark,



The original specimen of 'Donald Wyman' (seen here in spring bloom and fall fruit) still stands on Peters Hill.

MICHAEL DOSMANN

MICHAEL DOSMANN



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