

ARNOLDIA



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EXPEDITIONS FOR NEW HORTICULTURAL PLANTS*

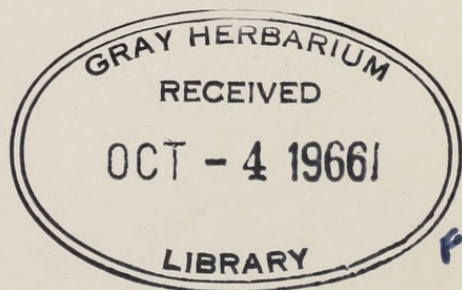
THE centers of origin of cultivated economic plants relate to the centers of our earliest civilizations. The dissemination of these plants to their regions of greatest economic impact relates to man's success in political domination of new frontiers. This does not necessarily apply to ornamental plants. While most of these were collected as by-products of more profitable ventures, the willingness to find room for ornamentals on long sea voyages reflects man's desire to beautify his surroundings. Thus Japanese emissaries to the great courts of China saw to the introduction of azaleas into China in the 7th Century AD and brought back to their own land the peony, flowering apricot, and chrysanthemum.

The physicians and scholars employed in the English, Dutch, and Portuguese trading companies introduced into Europe the wealth of Chinese and Japanese gardens. More than 60 plant explorers are said to have contributed to our abundance of garden plants during the last four centuries. Not only do many of these plants still grace our gardens unchanged from the time of their initial introduction, but they often carry the names of their original discoverers.

In the United States, garden plants have been introduced from abroad since Colonial times. As settled community life followed the pioneering days and as homes replaced homesteads, the best of the ornamental plants, shade trees, and flowering shrubs were quickly dispersed in the rapidly developing nation. As early as 1827, all U.S. consuls were requested by the President to send rare seeds and plants to Washington for distribution. I regret to say that ornamentals were not among the plants desired. The introduction of ornamental plants was left to the initiative of private individuals for many years to come.

The source materials of our ornamental horticulture had always been European, although many of the species are actually native to the Orient. But with the opening of Japan by Perry in 1854, a new and direct source of plants was provided.

* Presented at the 17th International Congress, August 18, 1966.



George R. Hall, a physician turned trader during the years before Perry's expedition, made shipments of ornamental plants from Japan to Boston, Mass., in 1861. By wardian case and a perilous ocean voyage, a great array of bamboos, cherries, conifers, magnolias, maples, and the lilies, *Lilium auratum* and *L. speciosum*, first arrived on our shores. Robert Fortune, the famous British explorer, had become acquainted with Hall's garden in Yokohama and had deposited there many of his own collections made as he travelled the road from Kyushu to Tokyo. It was in Hall's Yokohama garden that Fortune found plants of the male form of *Aucuba japonica* for which he had searched diligently. His objective was to introduce male and female plants into England as a means of obtaining a winter-hardy evergreen "covered with a profusion of crimson berries nearly as large as olives." He hoped that *Aucuba* would achieve the position of "the most hardy and useful exotic evergreen we possess."

Both Hall and Fortune departed Japan for their respective homelands, arriving there in 1862, each with wardian cases full of plants that probably resulted from a sharing of the proceeds of their individual collections in the newly opened Empire of Japan. Hall deposited most of his material with Parson's Nursery at Flushing, N.Y. This early plant collector is honored by names of a number of ornamental plants, including *Malus Halliana*, *Lonicera japonica* var. *Halliana*, and Hall's Amaryllis (*Lycoris squamigera*), which he first introduced into cultivation.

The Arnold Arboretum, representative of the several private institutions engaged in the introduction of ornamentals, began its collecting program when Prof. C. S. Sargent explored the West Indies in 1885. He also travelled to Japan and collected many Japanese plants including one of the most important azaleas, *Rhododendron Kaempferi*. E. H. Wilson, possibly our most famous explorer from America, placed ornamental collecting on a serious level. It is estimated that he contributed more than a thousand species previously unknown in cultivation. But he is best remembered for the collections of Kurume azaleas that he sent to the Arnold Arboretum. These are the most widely grown of our garden azaleas.

In 1898, a newly formed office of plant introduction in the U.S. Department of Agriculture began to make its name known. While the Department's interests were chiefly economic plants, ornamentals could scarcely be overlooked.

David Fairchild, champion of plant exploration in the U.S. Department of Agriculture, was responsible for the introduction of many Japanese economic and ornamental plants in our country. He arrived in Japan on April 26, 1902, but according to his notes too late to see the flowering cherries in bloom as he had desired. However, he traveled the length of Japan, sampling the curious edibles with enthusiasm. The margins of his field map of Japan are annotated with notes on interesting plant localities. During this journey he noted the extensive use of *Zoysia japonica* as a lawn grass and sent the first *Zoysia* introductions (P.I. 9299-9300) to the United States, along with a collection of 18 bamboos and 30 varieties of flowering cherries. To David Fairchild we owe recognition not only for

his own collections but also for his continued encouragement of the Department's plant exploration program, resulting in the vast contributions to American agriculture by Department explorers. These many plant introductions were widely distributed and the original introductions can be found today in many small towns.

In the 1920's Joseph J. Rock was the most active American collector. He roamed the great Snow Range on the China-Burma border in search of rhododendrons, lilies, and primulas. Between 1920 and 1924, he sent home scores of rhododendron species. Many of these are being used today in breeding programs. Unfortunately, a great number of Rock's collections that might be equally useful have been lost simply because of lack of a sustained program for maintaining his introductions. Rock continued collecting in China until 1934. His journeys took him into remote regions — such as the land of the Tibbu tribes, never before entered by a white person.

The Arnold Arboretum sent Dr. Edgar Anderson to the Balkans in 1934 to collect ornamentals among other plants. There he collected seed of a privet in the dry, barren hills near Sarajevo, Yugoslavia. The seed was sent to the USDA and assigned P.I. No. 107630. Plants were widely distributed in 1937. After only two years, observers in several rigorous climates including Cheyenne and Sheridan, Wyoming, and Sioux Falls, South Dakota, reported on the superior hardiness performance of this privet. Because of its sustained excellent hardiness rating during regional trials in the 1950's and its superiority over Amur River North privet, this introduction was named 'Cheyenne' by the USDA in 1965. In this instance the collector deliberately selected his material from an area of severe cold and subsequent trials bore out the validity of his selection. A second contribution from this expedition where hardiness was used as a criterion is the boxwood named 'Vardar Valley', also considered hardier than commonly grown varieties.

Public support for collecting ornamentals gradually diminished during the depression years. We relied largely on collections by missionaries, travelling officials, and correspondence. The Second World War entirely disrupted the work of ornamental exploration.

By 1950, the USDA had launched into an aggressive program of exploration to replenish our reservoir of breeding stocks and meet the demands of a new generation of plant breeders. Only one USDA exploration, that which I undertook in 1955 to Japan and the Ryuku Islands, emphasized ornamentals.

Due to the stringent quarantine rules that were enforced, the opportunities for collecting under private auspices had almost disappeared. The responsibility for providing promising new ornamentals to an increasingly interested public had to be assumed by the Federal Government. In 1956, through the efforts of Dr. Russell J. Seibert, Director of Longwood Gardens, the Agricultural Research Service and Longwood Gardens instituted a cooperative ornamental plant exploration program. For the first time, public and private institutions were joining forces to further this common need in American horticulture.

The basic concepts of collecting under the ARS-Longwood program are: to explore in those regions of the world where normal exchanges of plants and seeds cannot be effected; to procure new breeding stocks from centers of origin of our already important ornamentals; and to survey botanic gardens and foreign centers of ornamental plant culture for improved varieties that otherwise might not be made available to the gardening public.

In carrying out this program, the needs of plant breeders, nurserymen, botanic gardens, arboretums, display gardens, city foresters, and conservation specialists are considered. All of these needs have the ultimate objective of providing better plants for the American gardening public. It is through evaluation, distribution, and public education that the objectives of this program will be achieved. This is the only long-range program of ornamental plant exploration active in the United States, or, for that matter, in any country.

Since this turning point in 1956, we have undertaken 10 explorations. These have included Japan (2), Europe (2), Brazil, Australia, Nepal, Northern India and Sikkim, the USSR, and currently, collecting in South Korea.

As a result of the ARS-Longwood explorations, over 7,000 lots of plants and seeds have been inventoried as plant introductions. These materials have initially been shared by the New Crops Research Branch, the U.S. National Arboretum, and Longwood Gardens. The New Crops Research Branch has assumed the responsibility for preliminary evaluation, selection for elite types, and distribution of materials to State Experiment Stations, nurserymen, and private research institutes. The National Arboretum services the needs of sister arboretums and botanic gardens. Longwood Gardens also distributes plants on a limited exchange basis but best serves the public by giving previews of plants for the future in their displays of outstanding introductions.

Plant distribution and testing is a continuous process. However, the Glenn Dale Plant Introduction Station sent out 847 accessions for general evaluation during the 10-year period ending in June 1966. This totals over 42,000 plants sent to cooperators. The largest general distribution of introductions to be made since the beginning of the program took place in 1965 and included plants from Japan, Europe, Nepal, and the USSR. Other distributions are made to specific breeders who require a broad range of breeding stocks, such as azaleas and camellias.

Among others who are supporting ornamental expeditions, mention should be made of the Louisiana Society for Horticultural Research. In 1954 and 1958, the late Ira Nelson, University of Southwestern Louisiana, undertook two collecting trips to Central and South America. In 1961, this Society supported a collecting trip to Mexico by Dr. S. Solymosy. These explorations have as their objectives the introduction of worthwhile perennial and bulbous plants for Louisiana gardens. Plants collected are also made available freely to others who are interested in evaluating new garden plants.

Although direct exploration is the most rewarding means of introducing new ornamentals, international exchange wherever permitted by quarantine regulations, is an important source of plants. Many arboretums have wished to add new conifer varieties to their collections. However, these are largely prohibited from entry. The Arnold Arboretum has, over the last several years, acted as a coordinating agency to consolidate the requests of arboretums. In cooperation with the New Crops Research Branch, it introduces through quarantine at Glenn Dale, Maryland, a limited number of plants each year. When these are released from quarantine, the requesting arboretum eventually propagates additional plants for other arboretums. Thus a steady flow of new ornamentals, that might normally not gain entrance to the United States, is maintained.

There are still areas to explore. Many trails of earlier collectors need to be retraced. A new array of germ plasm for more adaptable, disease resistant ornamentals provided for the enjoyment of man in his gardens throughout the world. We need ornamental plants in our everyday lives. Plant exploration is the first step in this direction.

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