

9. Moxley, L., and H. Davidson. 1973. Salt tolerance of various woody and herbaceous plants. Mich. State Univ. Hort. Report No. 23.
10. Pellett, N.W. 1972. Salt tolerance of trees and shrubs. Univ. Vermont Ext. Service Brieflet 1212.
11. Shortle, W.C., and A.E. Rich. 1970. *Relative sodium chloride tolerance of common roadside trees in Southeastern New Hampshire*. Plant Dis. Rep. 54:360-362.
12. Sucoff, E. 1975. Effects of deicing salts on woody vegetation along Minnesota roads. Minn. Agr. Expt. Sta. Tech. Bul. 303. 49p.
13. Williams, D.J., and B.C. Moser. 1975. *Critical levels of airborne sea salt inducing foliar injury to bean*. Hort-Science 10:615-616.
14. Wyman, D. 1965. *Trees for American gardens*. MacMillan Co., New York.
15. _____. 1969. *Shrubs and vines for American gardens*. MacMillan Co., New York.

*Department of Horticulture
University of Illinois
Urbana, Illinois 61801*

JOHN BARTRAM: BOTANIST & HORTICULTURIST¹

by Paul W. Meyer

Abstract. John Bartram (1699-1777) was one of colonial America's foremost botanists, horticulturist and plant explorers. Collecting plants throughout Eastern North America, he was responsible for the introduction of between 150 and 200 new American species to England. In his garden on the Schuylkill River, Bartram grew the plants he collected in the wild as well as those sent to him from Europe utilizing the latest horticultural techniques of his time. Today his house and garden have been preserved and are now operated as part of Fairmount Park system in conjunction with the John Bartram Association.

The city of Philadelphia has a long established horticultural heritage. From the earliest plans envisioned by William Penn, Philadelphia was to be a green city. Today, besides having the largest city park in the country, the greater Philadelphia area has no fewer than nine public gardens and arboretums which are open to the public for study and passive recreation.

One of the foremost founding fathers of this horticultural and botanical tradition was a Philadelphian, John Bartram. Born in 1699 to English parents who had immigrated to Penn's colony, he was a farmer, botanist, horticulturist and plant explorer.

As a child he had little formal education besides the rudiments of reading and writing. He had, however, a strong curiosity about the natural world which surrounded him. Later in life he observed:

I had always, since ten years old a great inclination to plants and knew all that I once observed by sight, though not by the proper names having no person or books to instruct me.

His knowledge of plants' medicinal properties was often utilized when he treated sick neighbors who were unable to visit a physician in Philadelphia.

To further this interest, Bartram obtained botany books then written in Latin from friends in Philadelphia. Since his education was meager, he hired the local school master to teach him Latin. By the late 1720's he was botanizing throughout the surrounding countryside whenever he could free himself from his farming.

Sometime before 1732 Bartram became friendly with Joseph Breintnall, a Philadelphia merchant. Breintnall, a member of Benjamin Franklin's junto, was well connected in the Philadelphia intellectual community. He also had dealings with

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Peter Collinson, a wealthy London cloth merchant and a Quaker keenly interested in botany. Particularly desirous of native American plants, Collinson frequently requested Breintnall's assistance in obtaining them. Though Breintnall was able to send a few seeds and roots, it was not enough to satisfy Collinson's enthusiasm. In 1732 Breintnall referred Collinson to his friend John Bartram, suggesting that they could work out a satisfactory agreement.

The result was a lively correspondence and trade which were to last for more than 38 years. Whenever he could take time from his work, Bartram went into the wilds collecting plants, seeds, and roots to bring back to his garden, which he established at his house on the Schuylkill River just a few miles southwest of Philadelphia. He added novel specimens to his own collection and sent boxes of surplus plant material to Collinson for a price of five to ten guineas per box. In England word of Bartram's collections quickly spread and soon Collinson was acting as agent for other patrons including Philip Miller, who wrote the popular *Gardeners Dictionary*, Sir Hans Sloane, whose collections were used in founding the British Museum, and Lord Petre, a noted plant collector.

To satisfy his correspondents, Bartram soon began taking longer trips. In 1735 he followed the Schuylkill River to its source. He subsequently extended his trips to Maryland, New Jersey, New York, New England, Virginia and later into the Carolinas, Georgia, and Florida. Since most of his botanical journeys were barely self-supporting, he still maintained his farm as his principal means of support. Most of his trips were taken after the crops were harvested in the autumn, also an ideal time for collecting most plants and seeds. In 1763 Collinson expressed his appreciation for all these efforts when he wrote:

All botanists will join with me in thanking dear John for his unwearied pains to gratify every inquisitive genius.

Over the years Bartram built up a large following in Europe, including Dr. John Fothergill, a wealthy London physician and plantsman, Queen Ulrica of Sweden, and Peter Kalm, a

Swedish plant explorer and student of Linnaeus. In North America Bartram became the botanical central, corresponding and exchanging visits with botanists and horticulturists throughout the colonies. Bartram's career reached its peak in 1765 when Peter Collinson wrote him:

I have the pleasure to inform my good friend my repeated solicitations have not been in vain for this day I received certain intelligence from our gracious king (George III) that he had appointed me his botanist with a salary of 50 pounds a year . . .

Bartram's garden on the Schuylkill was the hub of all this activity. Here he cultivated and observed novel plants he collected in the wilds. He experimented with propagation techniques to increase his supply of plants so that all his patrons could be satisfied. Here he applied the latest horticultural theories of his time, acquired through personal observations, reading and correspondence. During Bartram's lifetime, travelers from all over the world with an interest in the natural sciences, visited his garden to see his curiosities and to hear his witty botanical observations. After meeting Bartram in 1738, Col. John Custis of Virginia observed, "He is the most facetious man I have ever met with and never was so much delighted with a stranger in all my life."

Bartram did more than anyone else in the 18th century to enrich European gardens with American plants. Until 1734, the year Bartram sent his first shipment to Peter Collinson, only 300 American species had been introduced into English gardens. From this date until the beginning of the American Revolution, the period of Bartram's active career, about 320 additional species were introduced. Of these, the English records credit Collinson with the introduction of 40 species, most of which probably came from Bartram. Nearly 200 species are credited to Philip Miller, who rarely named the original collector of his North American introductions. As early as 1736, Miller was a regular contributor to Bartram's subscriptions and received from Collinson his share of each shipment. In 1758 Miller wrote of Bartram:

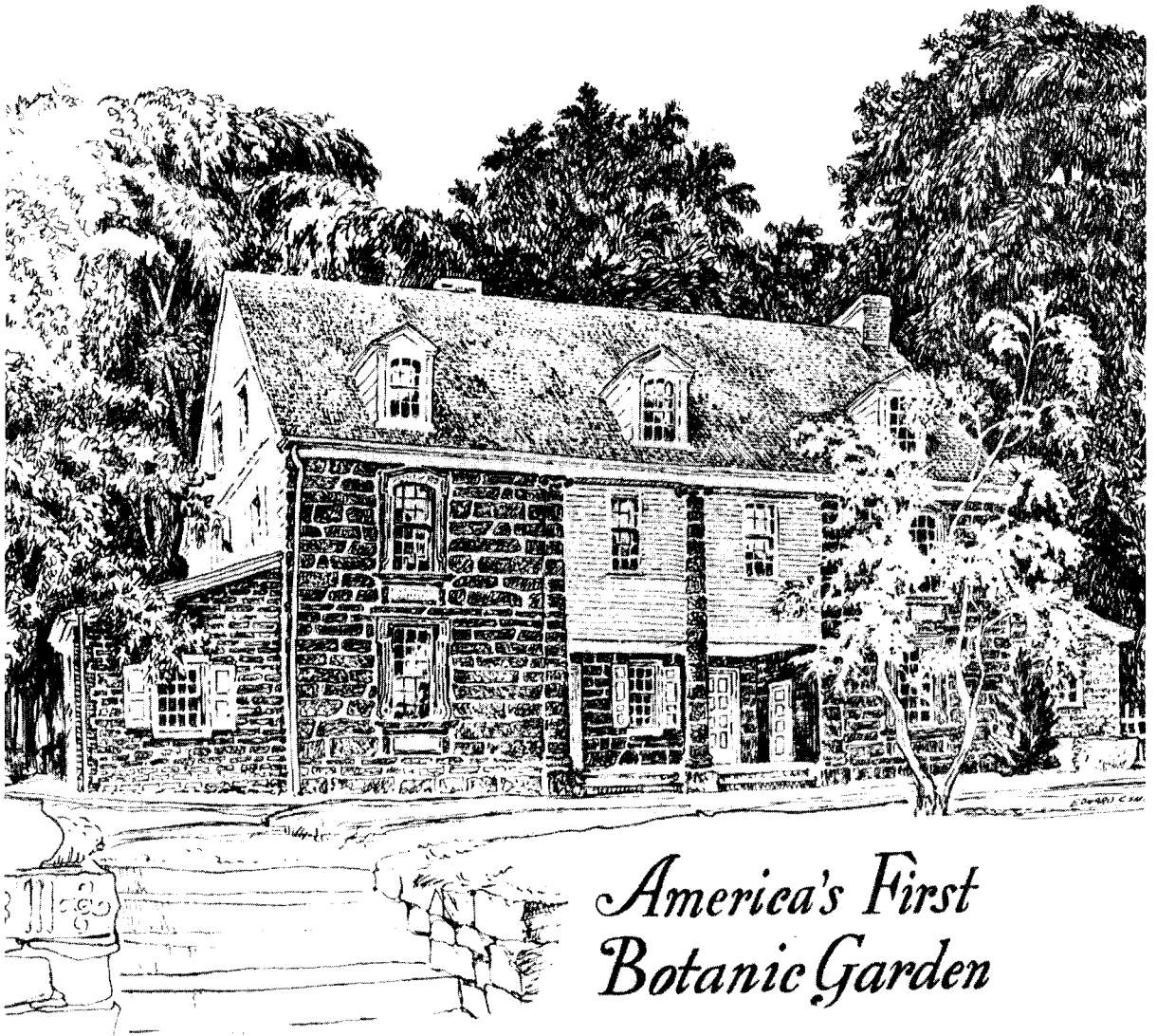
The specimens you was so good to send me by Captain Lyon would have been a good

treasure had they arrived safe. But the ship was taken by the French so that those are all lost which is a great misfortune at this time when they would have been a great service to me ascertaining the names of some plants which remain doubtful...

It is safe to assume that a large portion of the plants credited to Miller as introducer actually, came from Bartram. He probably was responsible for the introduction of between 150 and 200 new American species to England, including the *Franklinia* which is now extinct in the wild.

Each year Bartram sent large quantities of

seeds from species previously in cultivation in England but only in limited quantities. Thus, plants considered rare were made more widely available to British gardens. Besides introducing plants, Bartram also demonstrated the latest horticultural concepts of the time. Though today we think of container nursery production as a new idea, John Bartram produced containerized plants over 200 years ago, using a soilless mix. The following passage from a letter from Peter Collinson to John Bartram dated 1735, shows that they had a basic understanding for the need of organic matter, good aeration and good drainage in container



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production:

I wish that at the proper season thee would procure a strong box 2 feet square and about 15 or 18 inches deep but a foot deep in mould would be enough.

Then collect a half a dozen laurells and half a dozen shrub honesukles and plant in this box but be sure to make the bottom of the box full of large holes and cover the holes with tiles or oyster shells to lett the water dreine better off, then lett this box stand in a proper place in thy garden for two or three years till the plants have taken good roots and made good shoots but thou must be careful to water in dry weather.

Of course the colonial gardener's also had problems with various insects. Bartram wrote to Peter Collinson in 1745:

As for ye plums, apricots and nectarines they do but poorly with us as I tould thee many times, we have a mischievous beetle that bite or darts ye young ones then lays an egg which hatcheth and becomes a grub that eats ye fruit to live, then ye fruit drops off before it is ripe.

Collinson replied several months later:

To prevent the depredations of the beetles I confess it is not so easily remedied to some other bad effects . . . suppose as soon as this beetle is discovered it (the trees) was to be smoak'd with burning straw under it or at some distance so as to fumigate their branches at a time when the beetles are most liable to attack the fruit or if the tree was to be squirted on by a hand engine with water in which tobacco leaves

was soaked. Either of these two methods I should think if they did not totally prevent it at least would secure so much of these fine fruits as it would be worth the labor of people of circumstance who are curious to taste these fruits of perfection.

It may be information such as this that Ben Franklin was thinking about when he wrote to John Bartram in 1769:

You may be useful to your country and to mankind if you sit down quickly in your home, digest the knowledge you have acquired, and compile and publish the many observations you have made.

Later in that letter he went on to say,

I now I mention seeds. I wish you would send a few of such which are least common, they are for a particular friend who is very curious . . .

Unfortunately, Bartram was never able to sit down and compile the observations he made during his life. He was too busy collecting seeds for "very curious friends" and tending his garden. Luckily, however, his garden on the west bank of the Schuylkill River still remains and tells the story of John Bartram far better than any book. The garden along with the house is administered by the Fairmount Park Commission in conjunction with the John Bartram Association is open daily from 8:00 a.m. to 4:00 p.m.

*Curator
Morris Arboretum
Philadelphia, Pennsylvania*

ABSTRACT

Gilmore, A.R. 1977. **How fescue inhibits growth of sweetgum trees.** Illinois Research 19(3): 8-9.

Foresters have generally assumed, on the basis of experience, that trees planted in association with fescue will not grow very fast. An ongoing experiment at the Enfield Experimental Field in southern Illinois affirms this assumption. These results suggested that fescue caused an interference reaction on sweetgum over and above the response of sweetgum growth to environmental variation. Allelopathy accounts for most of the interference by fescue in sweetgum growth. Leachates from the dead leaves and roots of fescue had the greatest effect.