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**Front cover:** Forest plantations at the Biltmore Estate in Asheville, North Carolina, photographed by Alan Ward.

**Inside front cover:** A 65-foot tall paperbark maple (*Acer griseum*) photographed in eastern Sichuan by E. H. Wilson in 1910.

**Inside back cover:** In 1917, Wilson photographed *Acer triflorum* in the mountains of what is now North Korea. He considered it “among the handsomest of Korean trees.” Three young specimens grace the path to the Arboretum’s Hunnewell Building.

**Back cover:** Mosses under a forest of red spruce (*Picea rubens*) on an island off Maine. Photograph by Peter Del Tredici.
From Private Allée to Public Shade Tree: Historic Roots of the Urban Forest

Henry W. Lawrence

Since the middle of the nineteenth century the urban landscapes of Europe and America have been notable for their extensive plantings of trees. Along boulevards and in the large parks and small squares of most cities, trees shape and ornament the landscape in ways that are familiar everywhere. Before the 1850s the use of trees in public areas was less common, and planting patterns differed distinctly from one country to another. These patterns originated in the late sixteenth century, when ornamental plantings first began to shape the public landscapes of Western cities. Before that time, during antiquity and the Middle Ages, city trees were found mostly in private gardens and only rarely in streets or other public spaces. Most of the early plantings in the public landscape were patterned after those of private gardens, but as the use of trees increased, new landscape forms were developed for new settings and new purposes; these new forms even added new words to the vocabulary of urban geography.¹

The distinctive patterns by which trees were introduced into the public urban landscape reflected national differences in urban life and in the way cities expanded from their medieval conformations. As urban cultures converged, planting forms that were

¹ A watercolor showing the avenue of Lombardy poplars planted under the direction of Thomas Jefferson along Pennsylvania Avenue, leading to the U.S. Capitol. Signed by G. Burton, 1824.
developed first in one country for one purpose were adopted later in other countries, often for different purposes. The major cultural centers that fostered new types of urban plantings were found in France, the Low Countries (especially the Netherlands), Great Britain, and the British colonies that later became the United States. Italy and Germany, and to a lesser extent Spain, played vital roles in this process but were much less important as centers of innovation.

The First Innovations: Urban Allées

The earliest public plantings in cities adapted the form of the garden allée to new purposes. Since the Renaissance, rows of trees had been used to help structure the spatial composition of large private gardens, first in Italy and then more widely in France. In the late sixteenth century, ancient city walls were converted into massive earthworks to withstand the new weapons and siege tactics of the age, and these newly enlarged structures were planted with allées of trees. The first were apparently in Antwerp, in the Spanish Netherlands (in what is now Belgium), and in Lucca, Italy, both planted in the 1570s. They were meant primarily to provide shady promenades for city residents, although they may also have been intended to camouflage the city walls when seen from a distance.2

At the end of the sixteenth century allées began to appear in recreational areas, where they were used for bowling, for archery, and most importantly, for a new game very popular with the upper classes in the first half of the seventeenth century, similar to croquet and called in Italian pallo a maglio, in French palmail, and in English pall mall. Special areas of lawn lined with trees were laid out for the game, first in Paris in the 1590s and later in Berlin (Unter den Linden) and London (Pall Mall) by the 1650s.3

In 1616 another innovation appeared in Paris: an allée of much larger proportions, planted specifically for recreational carriage riding. Called La Cours de la Reine, it was built on the orders of Marie de’ Medici, the new Queen of France, who had learned the pleasures of carriage riding in Florence. The Cours was laid out alongside the Seine, just beyond the walls of the newly enlarged Tuileries garden, and was itself walled off to public access.4 The form of the cours was imitated in most major French cities by the middle 1600s and in London, Berlin, Madrid, and Rome by the end of the century.

Later in the seventeenth century another form of allée emerged in France, most prominently in Paris: the exterior avenue, a tree-lined road leading from a main city gate. The most important was the Avenue des Tuileries (now the Avenue des Champs Elysées) to the west of the Tuileries garden, just north of the Cours de la Reine. The avenue combined the form of the garden allée with that of the tree-lined rural road, which goes back farther in history.

Around the same time a fourth variant of the allée was constructed, again in Paris, in the form of the circumferential tree-lined boulevard, no longer atop rebuilt defensive walls but on the remnants of ramparts Louis XIV had decommissioned beginning in 1670. By the
end of the century the whole of the ramparts on the north side of Paris were transformed into a continuous promenade with double lines of elms on either side. Here at the boundary between city and countryside, the allée provided a delightful elevated pleasure ground, popular for promenades on summer evenings. In the eighteenth century it attracted a number of expensive shops, restaurants, theatres, and other amusements, thereby becoming more like a tree-lined street than originally intended.

All these variants of the allée were first introduced into the urban landscape at its edges: alongside, just beyond, or atop city walls. Most were originally intended as places for recreation, separate from the city itself. It was only when the cities later expanded that the allées were surrounded by buildings and made part of the street system, as in the case of Unter den Linden, which as a result of Berlin's growth changed from an exterior mall into a tree-lined street in the heart of a newly built-up area.

The Use of Trees in New Urban Areas

As towns and cities grew in population in the seventeenth and eighteenth centuries they were at first prevented from expanding outside their newly enlarged walls by the enormous expense required to rebuild these massive fortifications. When population pressures finally forced a move beyond the walls, the expansions were carefully thought out and followed long range plans that sometimes included open spaces with trees. This early form of city planning took on different characteristics in different countries, resulting in widely different patterns of tree plantings. The cases of Holland and Great Britain provide good illustrations of these differences.
Urban Expansion in Holland: Tree-lined Canals and Streets
The earliest and most widespread planting of trees in the newly enlarged cities occurred in the Netherlands. It appears that trees were first planted along exterior canals (much as they were elsewhere on city walls) that later were surrounded by new construction. But in the early years of the seventeenth century, as several Dutch cities expanded rapidly to accommodate a sharp rise in population, entirely new areas were laid out around new canals lined with trees. The rows of trees thus became widespread throughout the urban fabric, in residential and commercial areas as well at the periphery of the city.

The expansion of Amsterdam after 1615 was the largest and best known, but many other towns and cities also included tree-lined canals in their new districts. In some Dutch towns old canals were filled in to form streets and in a few towns these streets were planted with rows of trees. These new urban landscapes were unprecedented and astounded people from other parts of Europe. Even French visitors, familiar with a wider use of urban greenery than other Europeans, were amazed at the extensive tree plantings in the interior of Dutch cities. One visitor in the 1660s facetiously reported that he could not tell whether he was seeing a town in a forest or a forest in a town.7

Urban Expansion in Great Britain
An altogether different landscape form was used as urban areas expanded in Britain from the late seventeenth century into the middle of the nineteenth century—the residential square. Unlike most public squares on the continent, British squares were used as centerpieces for new development projects comprised of several blocks of new housing around an open space that was usually railed in, with a garden at the center. The earliest squares were paved or simply planted with grass, but in later years they included trees and shrubs. By the end of the eighteenth century most of the residential squares had been turned into leafy parks, some with a great variety and density of plantings. London, Bath, and Edinburgh made extensive use
of green squares and the variant forms of cir- 
cuses and crescents. These parks were for the 
exclusive use of the surrounding tenants, how-
ever, and were not open to the general public. 
Some are still private today, but others rank 
among the most important public green spaces 
in what is now central London: Grosvenor 
Square, Berkeley Square, Russell Square, Leices-
ter Square.8

Early Tree Choices in Europe
Evidence regarding the tree species used in these 
early forms of urban planting is scanty at best, 
but they are known to be limited in number. 
Elms (*Ulmus*) seem to have been preferred 
above others and were used on the boulevards 
and the Cours de la Reine in Paris and for the 
avenues at Versailles, as well as on the Mall in 
London. The Avenue des Tuileries, however, was 
first planted in the 1670s with horse chestnuts 
(*Aesculus hippocastanum*) and sycamore maples 
(*Acer pseudoplatanus*). Lindens (*Tilia*) were 
used on the canals in Amsterdam in 1615 and 
along Unter den Linden in Berlin in the 1640s 
and were intermixed with elms on the Avenue 
des Tuileries in Paris when it was replanted in 
the 1760s. The London plane tree (*Platanus x 
acerifolia*) did not appear until the end of the 
seventeenth century. Berkeley Square is reputed 
to have the oldest surviving plane trees in 
London, planted in the 1760s. All these species 
are tolerant of compacted, somewhat poorly 
drained soils, and are easy to transplant—vital 
attributes for urban trees then as well as now.

American Innovations and Imitations
An entirely different opportunity arose in the 
American colonies where plans for many new 
towns were informed by a strong desire to 
experiment with idealized urban forms, includ-
ing new kinds of public spaces that were often 
planted with trees. New Haven with its nine 
equal squares, the middle one left open as a kind 
of public park; Philadelphia with its original 
plan for five public squares; and Savannah with 
its repeating pattern of squares and parks were 
among the most innovative.9

More significant for the later development of 
urban landscapes in America, however, were 
two distinctive features common to colonial 
towns. The first was building density, which 
varied widely from town to town but was usu-
ally much lower than that of towns in Europe. 
After receiving a map of New Amsterdam in 
1660, the directors of the Dutch West India 
Company in Amsterdam complained to Peter 
Stuyvesant that the houses were surrounded by 
“excessively large lots and gardens.”10

The second characteristic that distinguished 
most colonial towns from their European coun-
terparts was the practice of leaving street tree 
planting to private citizens, rather than making 
it the responsibility of the government. This 
resulted in a heterogeneity unknown in Europe. 
In 1748 trees that lined many of New York 
City’s streets attracted the attention of Peter 
Kalm, the Swedish botanist. He noted the pres-
ence of plane trees (*Platanus occidentalis*), 
black locusts (*Robinia pseudoacacia*), lindens, 
and elms. Albany in the 1760s was described by 
another observer: “The town . . . was a kind of 
semi-rural establishment; every house had its 
garden, well, and a little green behind; before 
every door a tree was planted, rendered interest-
ing by being coeval with some beloved member 
of the family; many of their trees were of a pro-
digious size and extraordinary beauty, but with-
out regularity, every one planting the kind that 
best pleased him.”11

Large City Parks and Gardens
After allées, the most important landscape 
forms for bringing trees into cities were the 
large city park and the large public garden. Most 
public gardens began as royal gardens, of which 
large sections were usually open to the public 
and which devolved into state ownership with 
the demise of monarchies. The gardens of the 
Tuileries and of Luxembourg in Paris and 
the Tiergarten in Berlin are the best-known 
examples, but there were dozens more across 
Europe. On the continent these semi-public 
open spaces usually included carefully tended 
beds of flowers and shrubs between allées of 
trees lining crushed gravel paths, all laid out in 
regular geometric arrangements characteristic 
of formal gardening. Outside some cities were 
large hunting parks, usually forested, and less 
frequently open to the public. Near London, 
however, were several royal hunting parks that
admitted certain classes of the public for recreation as early as the seventeenth century. The first of these was St. James's Park, followed by Green Park and Hyde Park, all to the west of London in Westminster.\textsuperscript{12}

In America there was no comparable public use of private gardens and parks, although some wealthy residents occasionally opened their gardens to visitors. More important for the eventual development of parks were the large areas of publicly owned land adjacent to some towns and reserved for future expansion. In the early years much of this land was used for recreational purposes, as well as for grazing livestock or drilling militias, and portions were kept for public parks when the majority was sold to developers to accommodate urban growth. The Boston Common, the earliest example, and New York's City Hall Park originated this way. Other large parks were created in the nineteenth century on land purchased for that purpose by city authorities, such as Philadelphia's Fairmount Park and New York's Central Park.

**Late Eighteenth- and Early Nineteenth-Century Elaborations**

By the middle of the eighteenth century trees were being planted in an ever increasing number of ways in the urban public landscapes of western Europe and America. Regional differences were beginning to give way to more cosmopolitan landscape forms. Especially prominent in much of Europe were forms derived from innovative uses of the allée in France. These forms were variously called malls, promenades, or boulevards. Allées laid out originally for playing pall mall might be converted to carriage promenades, then to pedestrian promenades, and finally to arterial streets when the area succumbed to urban expansion.

As cities grew larger, parks and gardens also began to play a more important public role, as places for recreation and as open space inside a densely built urban landscape that was beginning to lose touch with its rural surroundings. On the continent most of the large parks and gardens owned by royalty had been opened up to the entire public, but as late as the 1830s access to most of the royal parks to the west of London was still limited by gatekeepers to well-dressed people, thus excluding the lower classes. The need for public space in the city became a contentious issue in Parliament, forcing grudging action upon the reluctant crown, city, and local boroughs. The first new London park meant for full public access was Victoria Park, to the east of the city, opened in 1846.

Provincial towns and cities in Britain, on the other hand, had been laying out public parks since 1830. One of the most influential of these, laid out in the 1840s in the community of Birkenhead, near Liverpool, was dubbed "the people's park." It was visited by Frederick Law Olmsted in 1850, and its accessibility and rural atmosphere served as models for Olmsted a few years later when he and British-born architect Calvert Vaux designed New York City's Central Park.\textsuperscript{13}

To a certain extent, the design of these new British parks reflected the changing tastes of the
times, as the geometrically arranged allées and avenues of the early eighteenth century gave way to irregular clumps of trees scattered across open fields by the end of the century, with beds of shrubbery and perennials added during the nineteenth. But even earlier, British parks had had a predominantly rural atmosphere, unlike the more formal public gardens on the continent, creating a contrast with the urban environment that became even more striking in later years when the parks' relative locations changed from peripheral to central as they were surrounded by urban developments. A much larger number of tree species was used in the parks than was the case along streets or in residential squares, including many of the "forest trees" deemed unsuitable for other urban uses, such as oaks (Quercus) and beeches (Fagus) and the occasional conifer, as well as a wide variety of smaller trees and shrubs.

In the independent United States of the 1780s, along with an increase in the number of street tree plantings in many towns, there was some movement toward establishing city parks and gardens. Around this time, the municipal government of New York City established the Battery, City Hall Park, and the cemetery in Greenwich Village that later became Washington Square. The 1790s saw a continued increase in planting, especially of the newly arrived Lombardy poplar (Populus nigra 'Italica'), which Thomas Jefferson had first encountered in France in the 1780s and ordered installed along Pennsylvania Avenue in Washington, D. C., when he was President. Although Lombardies were intensely disliked by some, they were planted in many cities to commemorate George Washington after his death in 1799, and most of the streets in New York and Philadelphia had at least a few of them by 1800.

By this time Americans had their share of all the forms of urban greenery used in Europe. Most towns had at least a bowling green, a public park with shady walks, a seaside promenade, and perhaps a pleasure garden named after London's Vauxhall, Ranelagh, or Spring Garden. New York had the most complete ensemble, with its Bowling Green, Battery, City Hall Park, tree-lined streets (by the 1830s most major streets had rows of trees on both sides); several private pleasure gardens; and even a British-style residential square, Hudson Square, laid out in the first decade of the nineteenth century, with others like Gramercy Park and Washington Square following in the 1830s and 1840s. In Boston, the Common had had a mall since the 1720s; in the 1790s Charles Bulfinch created the British-style Tontine Crescent, modeled on the crescents of Bath and London, where he had studied architecture; and Britain's residential squares were imitated in Pemberton and Louisburg Squares, the latter still gracing Beacon Hill though closed to the public. And in the late 1830s the Public Garden had been added to the Common.14

Internationalization of the Western Urban Landscape in the Late Nineteenth Century

By the 1840s most cities in western Europe and America had begun to use a range of landscape forms that incorporated trees in the urban landscape and were accessible to the entire public. National differences still remained: residential squares were found in both Britain and America, but Americans planted trees along many inner
city streets, unlike the British. Formal gardens and tree-lined boulevards were most common in France. The tree-lined canals in Holland were still unique. Germany presented a more complicated picture with many different forms being used, some similar to French models, others more like the British. But almost everywhere the most common forms were shared: tree-lined promenades, large public parks and gardens, and small plazas and squares. The language of urban design had become as internationalized as the languages of architecture or painting. Each new urban expansion or redevelopment used more cosmopolitan forms than had the preceding ones, and by the 1850s there were fewer and fewer differences among the new sections of most cities, be they in France, Germany, or the United States.

The renovations of Paris in the 1850s and 1860s under Baron Eugène Haussmann brought all these forms together in one urban setting and created a model that exerted a powerful influence on urban designers throughout the world in the next half century. Haussmann’s methods of renovation were incorporated into the Beaux-Arts style of architectural and urban design that was used throughout the Western cultural realm, including foreign colonies of Europe and America. The style influenced cities as varied and far-flung as Chicago, Manila, Rome, Buenos Aires, Saigon, and New Delhi. It brought together combinations of allées, boulevards, parks, gardens, and squares in ways that differed widely but were recognizable to everyone as variations on a single theme: the use of trees and green spaces in public landscapes to frame and integrate new kinds of urban architecture and provide a new urban way of life.

Endnotes
5 Louis-Sebastien Mercier, Tableau de Paris (Amsterdam: 1782–1788).

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Trees in the Frame

Alan L. Ward

As a designer as well as a photographer of landscapes I am haunted by images of trees. Trees are frequently the skeleton of a landscape composition, giving structure and order. In design, trees are used to create spaces in the same way that walls are used to create rooms in an architectural plan. Many of the photographs in my book, American Designed Landscapes: A Photographic Interpretation, are of views that are framed, filtered, or focused by trees. Just as trees direct the eye and frame views in the experience of these places, they serve to reinforce the structure of these photographic compositions.

At Middleton Place, a single monumental live oak (Quercus virginiana) arches over the water’s edge. This ancient tree, probably predating the settlement at Middleton, evokes rich associations of life and longevity. The photograph frames the marked horizontality of the tree, with its twisting limbs seeming to defy gravity in their reach over the water. The panoramic camera emphasizes its horizontality, and the asymmetric composition suggests the weight of the outward-spreading branches.
An ordered repetition of trees may direct a view or define a path. At Dumbarton Oaks, the north vista is defined by a mixture of hardwoods and conifers that extend from the center of the house and converge over a series of lawn terraces, enhancing the sense of distance as the viewer's eye moves outward. These borders are rendered as a unified mass of vegetation, framing the vista. Only the picturesque form of a deodar cedar (*Cedrus deodara*) stands out against the sky.
The repetition of trees along the street edge is characteristic of American urban spaces, an arboreal equivalent of arcade columns along city streets in Italy and Switzerland. Matched, tightly spaced plane trees (*Platanus x acerifolia*) flank the entrance roads at Solana, an office park on the Texas prairie. The low, early evening sun dramatizes the repeated tree trunks, which diminish in size as the eye moves toward the entrance of the building.
In the orchards of both the Miller Garden in Columbus, Indiana, and Naumkeag in Stockbridge, Massachusetts, the geometry of planting creates views along linear arrangements of redbud (*Cercis canadensis*) and apple trees (*Malus*). In the Miller Garden the midday light flattens the lines of redbud trees to a graphic blackness. Soft light reveals the texture of apple trees at Naumkeag.
There are also designs that imitate natural settings, such as groves or forests in parks and gardens. At Naumkeag, a birch grove is the setting for whimsical blue steps that descend through densely planted birches (*Betula papyrifera*) on a hillside. Bloedel Reserve (overleaf) is a series of gardens created on reclaimed timberlands on Bainbridge Island, Washington. The moss garden under a canopy of firs (*Abies*) and hemlocks (*Tsuga*) feels like an ancient place, exhibiting the ongoing processes of nature in the forest.
A photograph is a frame of the world, defined by vertical and horizontal edges. Trees likewise frame views, with their vertical tree trunks and leaves overhead. Photography is also about light. The light-modifying qualities of trees are subtly revealed in black-and-white film. Trees may appear in silhouette as lines and pattern, or with delicate and understated shades of vegetation. As trees define the vegetative edge of spaces, the individual trees recede and become subtle shades diminishing in the distance.

These photographs by Alan Ward are from his book, *American Designed Landscapes: A Photographic Interpretation*, which will be published this fall. He is a landscape architect and urban designer at Sasaki Associates in Watertown, Massachusetts.
Amazing Grace: The Cutleaf Maples

Rob Nicholson

Ask average gardeners to draw a maple leaf, and they will probably try to render a palmately veined, coarsely toothed, simple leaf similar to the symbol adorning the Canadian flag. This only shows the limited conception most people have of a genus whose members grow from Mexico to Manitoba and from Malaysia to Siberia.

Maples are one of the two genera of the Aceraceae (Dipteronia of China is the other) and number about 150 different species worldwide. As only a dozen of these species are native to North America, it is little wonder that our perceptions of what a maple can be are so limited. Asia, and in particular China, is where maple species are found in abundance; China lists 85 while Japan has 22 and Korea 9. It is toward the species of these countries that my list of favorite maples is most heavily weighed. (Where would horticulture be without top ten lists?) My preference is away from the broad, palmately leafed tribe and toward the cutleafed trifoliate and even pentafoliate species—graceful trees of unparalleled beauty. These maples are those with a compound rather than simple leaf and are composed of three similar leaflets, one terminal leaflet with two attending laterals.

Trifoliate maples, those of section Trifoliata, first began to appear in the United States as early as 1891 when C. S. Sargent of the Arnold Arboretum brought back seed of Acer nikoense from the mountains of Japan. Since then, many more species of trifoliate maple have been introduced and are now among the most highly regarded landscape trees. Having propagated hundreds of these maples and recently returned from seeing two of them in their native forests, I hope to raise the reader’s appreciation for these wonderfully useful and sublime plants.

*Acer maximowiczianum*

Japan and central China are home to a species of trifoliate maple known as the Nikko maple. Originally named for the Japanese temple city of Nikko, the tree was once known as *Acer*
The compact, neat, roundheaded habit of Acer maximowiczianum makes it a useful specimen for smaller scale landscapes.

nikoense, but a nomenclatural change has brought it to its present Latin name of A. maximowiczianum. It grows in the cool-temperate forest, preferring moist and fertile soils near streams. In central China it grows with such genera as Tilia, Carpinus, Betula, Fagus, Davidia, and other species of Acer. Trees of sixty-five feet have been reported from the wild, but most mature trees in cultivation are from forty to fifty feet. A tree raised from Sargent’s seed collection of one hundred years ago now measures forty-five feet high with a broadly domed canopy of forty feet. Its two-foot thick trunk shows a number of main branches close to the ground, the first at three feet, and these rise at a 45-degree angle upward to the canopy. The bark is more subtly colored than that of other trifoliate maples, being a tight medium gray, sometimes forming small plates and with curious vertical rows of bumps. The Nikko maple distinguishes itself most clearly by its foliage; it has the largest leaves of the trifoliate group. Each leaf consists of three leaflets, with two lateral leaflets at nearly right angles to the third, terminal leaflet. These thick leathery leaflets are oblong-ovate in shape, deep green above and pale green below, with the lower leaf surface and petiole having felty, silvery-white hairs. The edges of these leaflets are slightly wavy, although a few coarse teeth may be present. The size averages from 3 to 5 inches long and 1.5 to 2.5 inches wide, although trees from China have been reported with 7-inch long leaflets. This crisp, fresh greenery is the most outstanding attribute of the species, especially when it changes hue in mid-October (all times are for Boston). Luminous shades of scarlet and orange are made even more pronounced by the darkness of the gray bark. Oddly, the underside of the leaf remains a duller color. The flowers are held in threes, each a third of an inch long with ten chartreuse petals in two rings of five. While interesting on close examination, it is really a flower only a botanist could love.

The plants in cultivation in the United States have been reported to survive winters with lows of minus 25 degrees Fahrenheit without damage. As a woodland native the Nikko maple prefers fertile brown soils and a moist site. The proportions of Acer maximowiczianum make it an ideal tree for suburban gardens; if grown as a specimen tree on a lawn, it does not attain too large a size to keep in scale with most houses.

Acer griseum

The star of the trifoliate group is the renowned paperbark maple, Acer griseum. Native only to the central Chinese provinces of Hubei, Sichuan, Honan, and Shensi, it was introduced into cultivation by the prolific plant hunter E. H. Wilson and has come to be regarded as perhaps the best of his hundreds of plant introductions. He first found the plant in May of 1901, when he jotted in his field notebook “Hupeh’s best maple.” He later came to regard it as “China’s best maple,” and modern horticulturists may go even farther. Wilson recorded the
species on steep slopes of moist, rich woodlands of western Hubei between 4,000 and 5,500 feet. The maximum size of the tree was sixty feet with an eight-foot circumference, but trees of thirty to forty-five feet were more typical. Seed from these trees was collected for the Veitch Nursery of England in 1901 and for the Arnold Arboretum in 1907. Veitch raised a hundred plants from their seed, and the Arnold raised one seedling to pair with two seedlings Wilson had dug up in China and brought home to Boston.

The collector who seems to have seen the plant in the greatest numbers of localities was the Belgian Joseph Hers. He recorded it from five sites in Honan and two in Shensi, but I have not been able to determine if any seed was collected from these plants and, if so, whether they resulted in any seedlings. The Arnold Arboretum was a recipient of many kinds of seed collected by Hers, as was the Vilmorin Nursery in France, but no entries for Acer griseum exist in the Arnold's records among the four hundred items sent by Hers between the years 1919 to 1927. The same is true for the records of the National Botanic Garden of Belgium, another recipient of Hers' seed. A recent sighting of the tree was made in China by Wilson's spiritual heir, Roy Lancaster, but no seed was collected. The Sino-American Botanical Expedition of 1980 found the tree in the Shennongjia Forest District of Hubei (Wilson's old terrain), but none of the seed they collected resulted in seedlings.

It seems probable then that Wilson's collections in 1901 and 1907 are the only ones that have been brought out of China and that until very recently all trees in cultivation were descendants of these. In 1994 an expedition of the North American-China Plant Exploration Consortium collected 25 seedlings of Acer griseum on Hubei's Wudang Shan, and they are now growing at the Arnold Arboretum, Morris Arboretum, Longwood Gardens, and U.S. National Arboretum.

The bark of this Chinese species is unique in the maple family, a striking collage of textures and colors. The oldest bark, at the base of mature trees, is often an interlocking puzzle of irregular plates of copper and smoky gray. Younger wood is sheathed in tight bark of a ruddy maroon brown with patinas of orange brown and weathered bronzy olive surrendering curled shavings of cinnamon. The wood is hard and dense, and at certain points looks sinewy. The effect of this singular stem is of a dense, aged, metallic pillar of exotic alloy.

To photograph a frame of "typical" Acer griseum bark is akin to photographing a "typical" three-inch square of Monet, Seurat, or Pol-
lack, as every section of stem has its own composition, subtly different in character, a unique blend of curls and plates, bronzes, mahoganies, and coppers. It is a trunk that begs to be surrounded by snow as it literally shines in defiance of gray skies and chilling winds.

The foliage of the paperbark maple is reddish-brown when unfurling in spring but soon turns to a soft, deep green above, pale green and felty below. The margins of the leaflets are coarsely toothed with two to five large teeth on each leaflet's side. The foliage turns a striking crimson in late October and early November, blending beautifully with the coppery bark. Flowers are similar in size and color to those of the Nikko maple but the petioles are less hirsute.

The oldest paperbark maple that I know of graces the grounds of the Arnold Arboretum and is one of E. H. Wilson's original trio. Unlike other Acer griseum trees in the collection, this specimen has a squat, fat trunk that begins to branch at three and a half feet. Its dome is broad, some forty feet wide and twenty-five feet high. It is a venerable and monumental tree, a piece of living sculpture that honors its collector far more nobly than any work from an artist's hand.

The paperbark maple is ideally proportioned for lawn and specimen plantings as it doesn’t attain a tall stature in full sun. It works particularly well alongside the red brick dormitories and lecture halls of our Smith College campus, but it would be superb as a focal point in a woodland or courtyard garden, and as a grove of twenty, an unsurpassable luxury.

Collecting Trifoliate Maples

I recently fulfilled a longheld wish to collect seed of trifoliate maples in the wild. I had failed to do so earlier while on a visit to the town of Nikko, Japan, as I did not find the local trifoliate when I collected there. Botanists at the Nikko Botanic Garden have since written me that Acer maximowiczianum is now rare in those woods, perhaps because of its value for tool handles and construction.

My luck turned during a collecting trip to South Korea. Due to the hospitality of Ferris Miller, the owner of the Chollipo Arboretum, collecting in South Korea has become a relatively simple task, with good roads and well-maintained national parks adding to the ease of seed harvesting. It has become in recent years the preferred hunting grounds in temperate Asia, Japan being costly and China restrictive. Mr. Miller was host to two other collecting parties during my brief visit, and he now talks of being swamped with collectors.

The woodland forests of Korea have very fine fall foliage color, thanks mainly to their nine maple species. Acer pseudosieboldianum [sometimes called the purplebloom maple] has the most vivid colors, scarlets and reds, but close behind are two trifoliate species native to the mountains, A. triflorum, the three-flowered maple, and A. mandshuricum, the Manchurian maple. The three-flowered maple ranges from South Korea, where I saw it at 2,000 feet in the foothills of the Odae Mountains, north into northeastern China, with isolated disjunct stands reported in Shensi Province growing at 5,600 feet. It usually

The Wolchong-sa temple complex was founded in 654 A.D. and is now within the boundaries of Odae-san National Park. A beautiful specimen of Acer triflorum rises from behind the small temple.
grows to about fifty feet, but older trees in the wild have been recorded as high as seventy feet. I collected seed in the Odae Mountains, where I found the species next to a brook on the edge of a forest of huge *Abies holophylla*, the Manchurian fir. A mile up the road was the ancient temple complex of Wolchong-sa, and on a crisp fall day in the mountain forests I found a beautiful tableau, two maples with temple. To the front was a small *A. pseudosieboldianum*, its branches covered in leaves of pink and brilliant cardinal red. The temple is small, with a sedate gray tile roof covering two chambers that face an open middle section. Intricately painted beam work and panels counterbalance the somber roof and straightforward architecture. Behind it, fronting a screen of dark firs, was a glowing orange three-flowered maple, its lowest branches peeking through the alcove of the temple. Standing sixty-five feet high with a basal trunk diameter of three feet, it was far bigger than the tree I’d previously seen downriver. The bark at the lower portion of the trunk was splashed in pale gray-green lichens, these contrasting pleasantly with the gray and buff colored bark.

The three-flowered maples I have seen in cultivation have a silvery-beige bark, flaking in small plates to reveal coppery-orange and even pinkish tones beneath. These trees were over sixty feet high at seventy years of age and were more upright in habit than the Nikko maple. Unlike the Nikko maple, the three-flowered maple tends toward a single dominant trunk.

Its trifoliate leaf can be distinguished from others of the group by its bristly upper surface (the lower surface has a hairy midrib). Leaflets are medium green above, paler beneath, up to 3.5 inches long and half as wide, with two to four coarse teeth along the margin. In Boston its fall color usually appears during mid- to late October and is a blend of pumpkin, yellow, and wines, with orange being the dominant hue.

My hike from the Wolchong-sa temple complex to the highest point in the park, Mt. Pirobong at 5,100 feet, was a two-and-a-half kilometer climb through sublime fall forest color, an interplay of the maples’ blaze and the solid, somber green of fir. I first found the Manchurian maple, *A. mandshuricum*, at 3,400 feet, a small grove of trees on a sharply steep, cool slope anchored in dry brown soil. Sharing the hillside were *Betula schmidtii* and *B. davurica*, *Viburnum wrightii*, *Magnolia sieboldii*, *Rhododendron schlippenbachii*, *R. brachycarpum*, *A. pseudosieboldianum*, *A. ukurunduense*, *Astilbe koreana*, and *Hepatica asiatica*. In this tight, competitive canopy, the Manchurian maples were tall trees to eighty feet, with their first branches at thirty-five feet, yet had a relatively thin trunk diameter of about one foot. Toward the top of the mountain, one thousand feet higher, the canopy was lower and more open and here the Manchurian maple was a round-headed tree of thirty-five feet. Its bark was tight, plating slightly, and of a dark battleship gray color. The leaves of *A. mandshuricum* have narrower leaflets when compared to its cousins, the two laterals being held at a closer angle to the terminal and sometimes overlapping it. The oblong-elliptic leaves are a dark, glossy green above and pale green below, with a long tapered
tip and a margin of up to twenty small teeth. The leaves are carried in dense tufts at the ends of the branches and give this species a fine, feathery texture. I was struck by how much variation there was in the fall color of this species, especially when I recalled those trees cultivated stateside. In the wild, a dull ruddy purple to soft maroon seems to be the most common color, with undertones of blended pink, orange, and yellow. Among the yellows of birch and poplar in the high mountains, these reddening plumes were the standouts. In sharp contrast to these wild plants is the fall color of a specimen at the Arnold Arboretum. Grown from seed sent by the St. Petersburg Botanic Garden in 1906, the tree grows in full sun and measures fifty-five feet high by fifty feet wide. It colors early, usually in the first week of October, displaying a superb soft rose color. Once turned, the leaves last but a few short glorious days, then drop too soon. Based on its fall color alone, this striking tree is worthy of cultivar status.

Flowers of the Manchurian maple are less prone to the chartreuse coloration of the other trifoliates and can be a dull pink. But by late May, clusters of dark pink and chartreuse samaras are forming and these contrast beautifully with the soft green undersides of the leaves. Of all the trifoliate maples, A. mandshuricum is probably the hardiest, growing near the tops of frigid mountains in South Korea and surviving the brutal winters of northeastern China. It can probably withstand temperatures of minus 25 to minus 30 degrees Fahrenheit.

Propagation

Propagation of the trifoliate maples is problematic, which accounts for their scarcity in the nursery trade, although it is far easier to obtain one of these than it was even fifteen years ago. Viable seed rarely develops, as it is uncommon to find trees in cultivation close enough to each other to ensure pollination. I know of instances where nurserymen have converged on the same grove on the same day and proceeded to get into a roaring shouting match over the precious seed.

The seeds of these maples have what is known as a double dormancy, requiring a stratification period of moist and warm conditions (five months at 65 to 85 degrees Fahrenheit) followed by a period of cold and moist conditions (three months at 35 degrees Fahrenheit). After this pretreatment some germination will result, but most germination occurs only after a second period of stratification.

I have successfully propagated the three-flower maple by cuttings, taking them in mid-June, applying a medium-to-high strength hormone (IBA), sticking them in a medium of sand and perlite, and keeping them misted. More recent attempts at vegetative propagation involved grafting. Based on the advice of my college propagation professor, Sidney Waxman, I used sugar maple (Acer saccharum) as understock and got three different trifoliate species to take. The long-term outlook for these is uncertain, but so far the plants show remarkable vigor.

Other Cutleaf Maples

In researching the botanical and horticultural journals for information on these unusual maples I was surprised to find a few with dissected leaves that I had never before encountered and that are rare in cultivation or have yet to be introduced. One of them, the five-leaf maple, Acer pentaphyllum, was first reported by plant explorer Joseph Rock in China in 1929. He found the tree west of the Yalong River near Muli, in southwestern Sichuan province. It has been reported that only two to three hundred trees still exist. For generations, the only known adult tree in cultivation was in the Strybing Arboretum in San Francisco, but this plant has recently died. Seedlings have been raised from the Strybing plant and a number of nurseries on the West Coast now offer this rare tree. According to Rock, it forms a small tree growing to thirty-five feet with widely spreading or slightly pendulous branches. The bark on younger branches is brown to yellowish brown, while older bark is ashen. The most remarkable feature of this maple is its beautiful leaves, which are divided into five thin leaflets 2 1/2 to 4 inches long, a bright yellowish green above and soft green below. These wispy leaflets are held in a star pattern, with the interplay between the leaves and the slender, delicate stems producing an extremely fine, linear texture. Fall color is said to range from yellow to crimson. West Coast nurserymen consider the plant hardy
through the low 20s but question how much more cold it could take.

A number of varieties of trifoliate maples have been described in Chinese journals but are not now known to be in cultivation in any botanic garden nor have I seen most of them personally; I only add them as grace notes. *Acer kansuense*, originally described as a new species, was later reduced to a subspecies of the Manchurian maple and is now known as *A. mandshuricum* subsp. *kansuense*. If Wen-Pei Fang’s report is accurate, this maple, from the drier province of Gansu, could be an interesting, more drought-tolerant trifoliate maple.

*Acer sutchuenense* was first discovered by Père Paul Farges in northeastern Sichuan Province and was later collected twice by E. H. Wilson in western Hubei between 6,000 and 9,000 feet, although he considered it rare. It was probably not brought into cultivation until collected by the Smo-American Botanical Expedition of 1980, which included Arnold Arboretum taxonomist Stephen Spongberg. The SABE team collected the plant in the Shennongjia Forest of Hubei, and the seed was germinated at the U.S. National Arboretum. This trifoliate maple is said to grow to a small tree of twenty-five feet with leaves similar to *A. triflorum*. Hardiness is untested.

Other obscure varieties within the *Trifoliata* section include two of *Acer triflorum*. *A. triflorum* var. *subcoriacea* differs from the species by having leaves that are sparingly papillose on both surfaces. The variety *leiopodum* was described in 1934 from a specimen collected by G. Fenzel from a temple woods in Shensi Province in north central China. It is described as having smaller leaflets, glaucous below and

The village of Changyang Hsien in western Hubei proved fertile ground for E. H. Wilson. It was there he found the famous magnolia ‘Diva’ and collected the maple *Acer henryi*, seen here clothed in a January snow.
slightly pilose or nearly glabrous on the nerves and petioles. As Joseph Hers later collected A. griseum from the same mountain, the identification of the A. triflorum is questionable.

The Chinese trees of Acer maximowiczianum were assigned by the taxonomist Alfred Rehder to the variety megalocarpum because they show greater size in every part and greater pubescence than Japanese trees, but Chinese botanists consider it synonymous with the typical species.

Other Asian cutleafed maples can be found in the section Negundo, which takes its name from Acer negundo, the North American box elder, with three to nine leaflets. The Asian members, A. cissifolium and A. henryi. I consider superior to the weak-wooded A. negundo. The ivy-leaved maple, A. cissifolium, is native to Japan, where C. S. Sargent collected it and gave it strong marks. He wrote of it, “Acer cissifolium is a handsome compact round-headed little tree with slender graceful leaves, of a delicate green in summer, and orange and red in late autumn, and where it is one of the most distinct and satisfactory trees that have been tried in our climate.” Two plants, AA10649-A and 10649-B, grown from seed collected in 1918 by Wilson still grow on the grounds of the Arnold Arboretum.

I recently stumbled onto the Chinese relative of Acer cissifolium at the Morris Arboretum in Philadelphia. Henry’s maple, A. henryi, was a broadly domed tree of forty-five feet and had leathery leaves of a pleasing medium green with reddish petioles. It is said to be unique among trifoliate maples in the entire (untoothed) margins of its leaflets, but I did see a few toothed leaves on this tree. Bark was a gray-beige with irregular vertical lines of orange lenticels. Some twig dieback and bark damage was observed, so this species may be at the limit of its hardiness in Philadelphia. If so, it might be a good ornamental for more southerly sections of the country.

From the hands of a very few plant explorers have passed the seeds of these legacy maples. Over several generations their horticultural reputation has grown and only now are they in the nursery trade to any degree. The elegance and beauty of these rare and wonderful trees is almost mystical. They become more striking, noble, and desirable as they age. We should all be so lucky in life.

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Oglethorpe and the Oglethorpe Oak

Allen J. Coombes and W. Nigel Coates

A newcomer to the white oak group, rare in the wild and in cultivation, commemorates the founder of Savannah.

In March of 1994, a young oak tree from the state of Georgia was planted in a walled garden at the Meath Home, Godalming, England, to commemorate a famous son of Godalming, General James Oglethorpe, founder of Savannah, Georgia. The connection between this picturesque Surrey town and an oak from the “Peach State” may seem tenuous, but the tree chosen for the planting was, very appropriately, the Oglethorpe oak (Quercus oglethorpensis W. H. Duncan). A few years previously, the Sir Harold Hillier Gardens and Arboretum, which holds the United Kingdom’s national collection of oaks, had managed to obtain seed of this distinct and unusual species collected in Georgia and were pleased to be able to donate a young tree for the planting. The place of planting was also significant, for the Meath Home was originally Westbrook Place, the home of James Oglethorpe.

James Edward Oglethorpe, reputedly the last person to shoot snipe in Piccadilly, was born in 1696, the son of Theophilus Oglethorpe who that year had settled in Godalming, Surrey, where he had earlier bought the manor of Westbrook. The family were keen supporters of the Jacobite cause, particularly James’ sisters, Anne and Eleanor, who were involved in several plots; there were even rumors that Prince Charles Edward secretly visited Westbrook to plan the 1745 rebellion.

James himself kept aloof from such matters, and after education at Eton and Corpus Christi College, Oxford, spent his early life as a soldier in Europe. He returned to Godalming at the age of twenty-five to take up his inheritance and succeed his brother as member of Parliament, soon earning a reputation as an ardent social reformer, concentrating particularly on the injustices of the prison system. He found time to interest himself in local affairs and is recorded as donating a guinea here and there to local causes. He added to his estate by building a great wall of local Bargate stone to enclose a vineyard that soon became well known for its white wine.

Meanwhile, the idea of forming a new colony in America had been suggested and Oglethorpe was one of the prime movers in the project. It would be named after King George II and would occupy the space between the Carolinas and the Spanish settlers in Florida—far enough south...
to grow grapes and to produce silk, for it was reported that mulberry trees, grown to provide food for silkworms, were likely to flourish in the area. Georgia thus became the thirteenth British colony in America. Godalming's wealth was founded on wool, so there were plenty of local people skilled in producing textiles, and some of these, with others attracted by national advertising of the opportunity to start a new life, made up the 120 settlers who sailed with Oglethorpe from Gravesend in November 1732. They reached their goal on February 12, 1733, still annually celebrated as Georgia Day, and within a few weeks had laid out the rectangular street plan of the city of Savannah.

Each family was given three lots, space for a house, a five-acre garden on the edge of the settlement, and forty-five acres in the neighboring countryside to be cleared for farming. On the edge of the town Oglethorpe created a ten-acre Trustees' Garden to try to find the best conditions for growing mulberries and other plants, now acknowledged as the first agricultural research station in America.

In a letter to Sir Hans Sloane dated September 19, 1733, Oglethorpe apologized for not having time to "make a collection of such things as might be agreeable to one of your curiosity." He did, however, send specimens, and some thirty-eight collections are held in the Sloane Herbarium at the Natural History Museum in London. Annotated with pre-Linnaean names in Oglethorpe's own hand, these consist of a variety of mainly herbaceous plants but certainly include a specimen of poison ivy (Toxicodendron radicans; synonym Rhus radicans).

The Trustees' Garden had auspicious beginnings. With sponsorship from Sir Hans Sloane and the Society of Apothecaries, and advice from Philip Miller of the Chelsea Physic Garden, many plants of potential commercial importance were introduced, including white mulberries, oranges, peaches, figs, pomegranates, olives, vines, and cotton, as well as vegetables to supply the needs of the expanding colony. Cotton and peaches still remain two of the major commercial crops of Georgia. Unfortunately, the garden soon became neglected and many plants were killed in a hard frost in March 1738. It continued to supply mulberry trees, which were available to planters free of charge, until about 1748, but was eventually abandoned and converted to residential use in 1755. A bronze marker, commemorating the 250th anniversary of the founding of the garden was erected on the site in 1983.

The local natives, the Yamacraw tribe, responded favorably to the colonists' overtures of friendship, and when Oglethorpe returned to England he took with him ten of their number, including Chief Tomochichi. They met the trustees of the colony, the King and Queen, and caused quite a stir in Godalming when their host took them to dinner at the White Hart.

On his second voyage, James was accompanied by the brothers John and Charles Wesley, family friends who were going to minister to the spiritual needs of the colonists and the natives. The government's idea of funds for running the new colony proved miserly, and the estate at Westbrook had to be mortgaged to raise the necessary money to keep it going. Once back in Georgia, Oglethorpe founded the settlements of Frederica on the coast and Augusta farther up the Savannah River. He then made one more quick trip to England to try to raise a regiment to meet the growing threat of Spanish invasion. The expected blow fell in 1742; the invaders were defeated at the battle of Bloody Marsh and driven back into Florida, for which achievement James Oglethorpe was rewarded with promotion to the rank of Brigadier General.

The following year he returned to England for the last time, married, did a little more soldiering in Europe in the service of Frederick the Great, then retired to the country, where he died at the age of eighty-eight. Oglethorpe is still honored in the state that grew from his colony. His statue stands in a square in the center of Savannah; the map of Georgia shows Fort Oglethorpe City and Oglethorpe County; and Oglethorpe University was founded in Atlanta. The City of Savannah has proposed the restora-
tion of the Trustees’ Garden on its original site. It would surely please the General’s philanthropic heart to know that his house in Godalming has been run for one hundred years as a home for epileptics, and it is good to record that it has been presented with an Oglethorpe oak to grow in the walled garden that the founder of Georgia knew so well.

While James Oglethorpe’s involvement with Georgia goes back more than 250 years, the Oglethorpe oak is a relative newcomer to the genus, described too late to be featured in C. S. Sargent’s two-volume work *Manual of Trees of North America* (1905) or *The American Oaks* by William Trelease (1924), but in time to be included in a list of additions and corrections in Volume 3 of *Les Chênes* by Mme A. Camus (1952–1954). It was originally noticed as distinct as late as 1940 by Wilbur H. Duncan of the University of Georgia in Athens, who, in the company of Professors G. N. Bishop and A. D. McKellar, found trees growing in abundance on Buffalo Creek near Lexington, Georgia. These trees had previously been thought to be *Quercus imbricaria* (shingle oak), but further investigation by Duncan showed them to represent an unnamed species that he described as *Quercus oglethorpensis*. An earlier collection made by T. G. Harbison from Elbert County, Georgia, was also referred by Duncan to this species. The name does not commemorate James Oglethorpe directly, but Oglethorpe County, in which the trees were found and the type specimen was collected. In 1950, Duncan reported the finding of *Quercus oglethorpensis* by Professor Bishop in Greenwood County, South Carolina.

The Oglethorpe oak makes a large tree to 25 meters (80 feet) or more in the wild, the young shoots sparsely covered with stellate hairs and glands at first, becoming smooth and deep red in winter. The deciduous, elliptic to obovate leaves to 13 centimeters (5 inches) long are usually without teeth and often with wavy margins, but can be slightly lobed, particularly on vigorous shoots of the second flush (as seen in the illustration). They emerge bronze-tinged, becoming a rich, glossy green, and remain on the tree late into autumn when they can turn briefly red, then brown. When they first emerge, they are dotted with short-stalked red glands above and with sparse stellate hairs, becoming glabrous, while the undersides are thinly covered with persistent stellate hairs. The acorns

![Quercus oglethorpensis at the Morton Arboretum, Lisle, Illinois.](image)
mature the first year and are ovoid, about 11 millimeters (1/2 inch) long and one-third enclosed in the cup, which is sessile or shortly stalked. Although originally confused with *Quercus imbricaria* (a red oak), the Oglethorpe oak is not closely related to that species and is, in fact, a white oak. It is considered by Duncan to be a relict species closely related to *Q. margaretta*, and a tree found by Duncan in Oglethorpe County appears to be a hybrid with this species.

Oglethorpe oak is of very restricted distribution in the wild, confined to two isolated populations, with its main range in a few counties in the Piedmont of northeast Georgia and neighboring western South Carolina. It is found on poorly drained bottomlands and neighboring slopes, uplands, and stream terraces associated with *Acer rubrum*, *A. saccharum* subsp. *leucoderme*, *Celtis laevigata*, *Fraxinus pennsylvanica*, *Quercus alba*, *Q. falcata*, and *Q. pagoda* (formerly *Q. falcata* var. *pagodifolia*). In the wild it is susceptible to chestnut blight. Until an extensive study of its distribution by Haehnle and Jones, Oglethorpe oak was known from only forty-five sites. They added another one hundred to this and considered that its absence from five of the previously recorded localities was due to land clearance for agricultural development. It was also suggested that although populations of Oglethorpe oak had probably not been seriously affected since its discovery, it was likely that prior to this, agricultural development had reduced the range of the species and its population density. The Georgia Department of Natural Resources describe it as threatened in the wild and its habitat has suffered clearance for agriculture and forestry. Oglethorpe oak has recently been assigned endangered status by the International Union for Conservation of Nature and Natural Resources.

Oglethorpe oak also has been reported from other states. The population found near Copenhagen, Louisiana, is, according to Dr. Kevin Nixon, *Quercus sinuata* (formerly *Q. durandii*), but what appears to be *Q. oglethorpensis* was reported by Wiseman from three sites in the Bienville National Forest, Scott and Jasper Counties, Mississippi.

In cultivation, both in North America and Britain, this species is uncommon. Plants growing at the Sir Harold Hillier Gardens and Arboretum date from two accessions; firstly, scions received in 1978 were grafted onto *Quercus robur* and planted in the early 1980s, and secondly, plants derived from seed collected in the Oconee National Forest in Jasper County, south of Monticello, Georgia, in late 1988 by Marshall Adams. The Meath Home plant derives from the latter collection. In spite of its southern American origin, this species is proving reasonably hardy in cultivation. At the Sir Harold Hillier Gardens and Arboretum the oldest specimens have made bushy plants up to 3.5 meters (11 feet) tall with a spread of 4.5 meters (15 feet), often branching from just above the base.

In Britain, young shoots of this species are frequently damaged by frost during winter, when temperatures typically reach 20 degrees Fahrenheit or below, but this is probably due to the lack of sufficient summer heat to ripen adequately the growth rather than winter cold, which can be just as or more intense in the southern United States. As a result of winter damage here, the plants grow slowly and usually produce numerous young shoots in summer from the frost-damaged wood.

That the poor performance of this species in Britain is due to lack of summer heat rather than low winter temperatures is clearly shown by plants growing at the Morton Arboretum in Illinois. There, plants grown from seed collected in Greenwood County, South Carolina, have reached 3 meters (10 feet) tall in fifteen years. In the winter of 1993–1994, following ideal conditions for wood ripening the previous autumn, little injury was incurred even when temperatures fell to minus 22 degrees Fahrenheit. However, growth that occurs late in autumn and does not ripen properly can be injured at a temperature of zero.

Also in Illinois, at Guy Sternberg's Starhill Forest, near Petersburg, this species grows slowly but has survived even the coldest winters undamaged. Further south, Oglethorpe oak grows more vigorously, and on the campus of the University of Georgia, Athens, ten- to twelve-year-old trees have reached 6 meters (20 feet) tall and 5 meters (15 feet) in spread with
coarse, scaly bark. The leaves remain until late autumn when they turn brown and (on these young trees) remain through winter. Planted trees can also be seen at the Oglethorpe County courthouse, Lexington, Georgia.

Judging by specimens in the Kew herbarium collected by Duncan near Lexington, Oglethorpe County, Georgia, in 1942, this species comes into leaf much earlier in its native habitat than it does in Britain. Whereas at the Sir Harold Hillier Gardens and Arboretum and the Morton Arboretum it is normally well into May before the foliage starts to emerge, a flowering specimen collected on April 18 already had the young leaves opening, while a specimen in full leaf was collected on July 12. In cultivation in Savannah, the leaves emerge in mid- to late March.

Although the Oglethorpe oak is unlikely to make a tree suitable for landscape use either in Britain or the United States, its historical associations with James Oglethorpe, as well as its rarity, make it of great interest. Oglethorpe oak is rarely available from nurseries, but plants can be obtained from Woodlanders, Inc., 1128 Colleton Avenue, Aiken, South Carolina 19801.

Bibliography


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Allen Coombes, botanist at the Sir Harold Hillier Gardens and Arboretum, Hampshire, England, is an active plant collector and explorer and author of many articles and books, including the handbook *Trees*. W. Nigel Coates is vice-chairman of Godalming Trust and author of *Godalming—A Pictorial History.*
Book Review: Mosses in the Garden

Benito C. Tan


This book is one of the few available in bookstores that deals with the use of bryophytes, mainly mosses, and other forest cryptogams, such as lichens, lycopods, and spike-mosses, in cultivation both outdoors and in. The author has lived and worked in several mossy cities around the world, including North Vancouver, Seattle, and Auckland, where a mild temperate climate promotes a lush and rich moss flora, and he has developed a strong affection for the beautiful world of mosses. The humid environs of the Pacific Northwest also assure his success in introducing natural moss populations into home gardens and potting designs. Readers living in drier or colder regions, however, may not be as successful.

Moss Gardening consists of fifteen chapters that cover a wide variety of topics, from moss gardens in Japan and Europe, alpine and rock gardens, to bonsai moss decoration. Practical tips and observations on growing mosses under garden conditions and in miniature containers are scattered throughout the pages. Included in the text are exhilarating color photographs of pretty moss gardens and individual moss species. The reader cannot help but be infected by the author's love and appreciation for mosses after reading the book. Mr. Schenk, also the author of Rock Gardens and The Complete Shade Gardener, is to be congratulated for a job well done.

Moss-covered steps in a New England garden

As a professional bryologist who studies moss diversity and also grows mosses in small containers for teaching demonstrations, I am impressed by Mr. Schenk's general knowledge of mosses, especially of the conditions they grow in in nature. The author repeatedly reminds us that success in moss gardening depends on choosing the right mosses for the garden site and matching the site to the conditions of the natural habitat. Despite this, I would caution readers that the book is not a guide to growing ornamental mosses from spores. Moss gardeners or potential users of mosses for ornamental purposes should not look to this book for formulas for growing particular species of moss in your backyard.

Anyone who has tried growing mosses outside their natural habitats quickly learns about the difficulty of maintaining a transplanted population under manmade conditions over a period of time. Seen in this light, I particularly like Chapter 7, in which the author describes five practical methods of planting and maintain-
ing moss carpets in gardens. Likewise, Chapter 10, which introduces the growing of mame, or tiny mosses, in containers and miniature terraria for indoor display, is elucidating and educational. Tips for growing green moss cover for vascular bonsai plants are equally useful. As a lover of mosses, I do not like Chapter 15, which discusses the business aspect of selling mosses and lichens to the public. Since these two groups of forest cryptogams are slow growers in nature, this suggestion will further diminish our mossy forests, which are still the only profitable source of marketable moss material in this country. Reports of damaging harvests of wild populations by nurseries and plant shops in the Pacific Northwest have seen print many times in local newspapers and national news magazines.

Scientifically, I found only a few errors. For example, Plate 77 is not Drepanocladus uncinatus as identified, but is a Rhytidiadelphus, and it is doubtful that the moss illustrated in plate 81 is Hygrohypnum luridum. Also, I would not follow the advice to grow Encalypta ciliata on a slab of lava with Hypnum cupressiforme (see page 132, also plate 56). Encalypta is a strong calciphile and will grow only on a calcareous substrate.

Moss Gardening is mainly concerned with the garden beauty of the subject plants and minimally the science, as its author notes in Chapter 1, and it is for the book's aesthetic and horticultural values that I recommend it to both gardeners and nongardeners of mosses. This lyrically written book has done justice to a group of plants that is often overlooked and underappreciated in our biological world.

Benito Tan, formerly a bryologist at the Farlow Herbarium, Harvard University, has joined the Faculty of Science, National University of Singapore, as Senior Lecturer in Botany.
Celebrating the Close of Our 125th Year

Members and supporters of the Arnold Arboretum are invited to attend this final event in our year-long 125th anniversary celebration on Friday, October 17. Join us at the Arboretum to tour the Hunnewell Building, meet the staff, view the new Science in the Pleasure Ground exhibit, and hear a lecture by renowned British horticulturist Roy Lancaster.

Plant collector, British television personality, and gardener extraordinaire, Lancaster has authored books on his explorations in China and Nepal, on Mediterranean plants and gardens, on plants for connoisseurs, and most recently, What Plant Where. For our anniversary, he will present a slide-talk on Japan and its plants in autumn color. We hope you’ll join us in celebrating 125 years of discovery while taking an inside look at the Arnold Arboretum and spending an evening with one of the world’s most distinguished plantsmen. An invitation along with RSVP form will be sent to all members in September.

**5:00–7:00 P.M.**
**Open House at the Hunnewell Building**

**7:30 P.M.**
**Lecture by Roy Lancaster at the Massachusetts State Laboratory, 305 South Street, Jamaica Plain**

(near the Arboretum’s Forest Hills Gate)

The Institute for Cultural Landscape Studies

*Robert E. Cook, Director*

This fall the Arnold Arboretum will launch a new enterprise, the Institute for Cultural Landscape Studies. It is a natural outgrowth of our six-year collaboration with the National Park Service. The mission of the Institute will be to develop and disseminate information about cultural landscapes and their conservation to practitioners and the public. We believe that the Institute will become an important organization throughout the New England region and the nation.

What is a cultural landscape? In practical terms, cultural landscapes are parcels of land that have experienced historic land uses of continuing importance to the community and often have significant natural and economic value as well. The Arboretum, of course, is a cultural landscape, one whose cultural history forms the central theme of our recently opened exhibit, Science in the Pleasure Ground, on display in the Hunnewell Building. Other examples might be the highly designed and documented gardens that surround historic houses such as the Longfellow House in Cambridge, or Fairsteds, the home of Frederick Law Olmsted in Brookline.

But the concept of a cultural landscape embraces a much broader range of land uses. A large, working dairy farm in southern New Hampshire not far from a growing suburb of a major city may have been held in a single family for half-a-dozen generations. It may also have been the scene of a significant engagement or troop movement in the Revolutionary War. Finally, it may once have been the seasonal center of a native American settlement, and its soils today could contain abundant archaeological evidence of this past.

Through case studies, conferences, and selected field projects, the Institute will collaborate with a number of organizations actively involved in protecting natural and historic resources, such as the Nature Conservancy, the Trust for Public Land, the Society for the Preservation of New England Antiquities, and The Trustees of Reservations. Our goal will be to produce new information leading to practical solutions to difficult problems that arise when both cultural and natural resources are important for parcels of land whose economic value is changing. We hope to make this information readily available to practitioners in formats that are accessible and easy to understand. We also believe that such information, when provided through the Internet, will become increasingly valuable to citizen volunteers who serve their communities. Whether those volunteers work through local government or local land trusts, the Institute will support their commitment to preserve one of their most important resources—the land and its traditional uses.
Summer Interns of 1997

The interns of 1997 came from as far away as California, Michigan, and Canada, and from as near as Connecticut and Maine. Pictured here are the interns and a project some worked on under the leadership of Arboretum apprentice Alistair Yeomans. Over the last few years, the death of trees associated with increased foot traffic and mountain-bike activity has accelerated erosion on the eskers located between the greenhouse/nursery area and the legume collection. Using wood downed in the blizzard, they installed a series of “check dams” on some badly damaged slopes. Much of the interns’ other work this year was created by the April Fool’s Day Blizzard.

Instruction in woody plant identification, horticultural maintenance, and plant propagation, visits to Walden Pond and the Olmsted National Historic Site, and a walking tour of the Emerald Necklace as well as other field trips, classes, and lectures supplement the interns’ hands-on training.

New Staff

Matthew Davies has joined the Arnold Arboretum as staff assistant in the development department. Matt comes to the Arboretum from Suffolk University, where he provided administrative support to the director and assistant director of development on all aspects of annual giving. His experience includes event planning and coordination and database management.

Life on a Limb

“Harvard Hero” takes on added meaning with the recognition of Arboretum head arborist John Olmsted for outstanding service to the University. Initiated by Sally Zeckhauser, Harvard’s Vice President for Administration, the “Harvard Heroes” program recognizes employees for work of exceptional quality and commitment.

At the ceremony, before family and friends, John was lauded for maintaining the Arboretum’s trees with dedication, initiative, and fortitude. John has characteristically gone beyond expectations since joining the staff in 1990. He was also commended for the training in arboricultural techniques he gives to Arboretum interns.

Matt will provide administrative support to the director of the Arboretum and members of the development department.
Roy Lancaster, plantsman, author, and British television personality, will offer a slide-talk on Japan and its plants, Friday, October 17. He is seen here with *Rhododendron falconerii* x *sinogrande* 'Fortune'.

The Arboretum Campaign Goes Public

On Friday, June 13, 1997, Harvard President and Mrs. Neil Rudenstine, members of the Director's Advisory Board, Arboretum director Bob Cook, and 90 longtime Arboretum friends and donors gathered for a special dinner in celebration of the public phase of The Campaign for the Arnold Arboretum.

Campaign chairman Francis O. Hunnewell announced that in this first fundraising campaign since 1927 (following the death of Charles Sprague Sargent), the goal is to raise $8.2 million for the Arboretum’s endowment and capital projects, of which $3.8 million has been committed to date. Campaign objectives include adding significantly to the endowment for the living collections and establishing permanent endowments for two critical Arboretum programs in the areas of children’s science education and international biodiversity conservation. The campaign will also raise funds to build and endow a new garden for sun-loving vines and shrubs.

Speaking at the June dinner, President Rudenstine underscored the campaign’s priorities while reflecting on the Arboretum’s significance to the University and the larger community. The campaign, Rudenstine noted, aims to "sustain the Arboretum and its programs at the level of excellence that has been established and maintained. It will sustain the Arboretum’s vital educational efforts for both children and adults. And it will contribute directly not only to the understanding of our natural surroundings close to home, but also to research on important questions of biodiversity abroad and to the larger goal of environmental protection."

"The cause could not be better," Rudenstine added, "because the Arboretum touches on so many different aspects of our lives: natural beauty and the beauty of design; the process of teaching and learning; the discovery of new knowledge, driven by deep curiosity about the natural world; and the effort to improve the environment we live in."

We plan to complete the fundraising effort by the conclusion of Harvard University’s comprehensive campaign on December 31, 1999. For more information about The Campaign for the Arnold Arboretum, contact Lisa M. Hastings, Director of Development, at 617/524-1718 x 145.
Ketko Satoh

I arrived in Boston from autumn in Canberra, Australia, just in time for Lilac Sunday, to take up a one-year appointment as a Putnam Fellow at the Arnold Arboretum. I was quite prepared for the New England weather because just four years ago I graduated from Mount Holyoke College in western Massachusetts. During my year here, I will be working under Sheila Connor's guidance on the E. H. Wilson and plant distribution archives and, with Stephen Spongberg, editing an unpublished manuscript by E. H. Wilson. Written in the late 1920s, its subject is the species that he considered his best introductions into cultivation. Another part of my project is the creation of a computer database of Arboretum plant distribution records, which were kept on index cards from 1910 to 1970. The database will track information on Arnold Arboretum plant introductions. In addition, I will be producing botanical illustrations of Sorbus for Dr. Spongberg.

Having lived in several different countries by virtue of my father's diplomatic postings, I have had many opportunities for travel and extraordinary experiences. I received my first exposure to the world of taxonomy and training in nomenclature when I curated shells (Architectonicidae: Gastropoda) at the National Natural History Museum, Leiden. This in turn led me to undertake a Master of Science course in biodiversity and taxonomy of plants at the University of Edinburgh and the Royal Botanic Garden, Edinburgh. It was there that I learned a great deal about the Arnold Arboretum and E. H. Wilson through my classmate Andrew Bell, himself a former intern and Putnam Fellow (summer 1995). Also during that time I was able to meet Dr. Spongberg and Susan Kelley on their respective trips to the Garden.

Working on the Wilson material offers me more than professional interest: it teaches me a great deal about the history and culture of my home, Japan, and also of China, where my great-grandparents were posted at around the same period as Wilson was traveling there. Many of his photographs depict aspects of those countries that have since changed drastically or disappeared.

Youngest celebrants at the Arboretum staff's 125th-anniversary gala were the director's daughters, Christina Farrow Cook and Katherine Farrow Cook, born on June 12 to Lee Farrow and Bob Cook.

Arnold Arboretum
Open House

The Arnold Arboretum once again cordially invites the public to an Open House on Saturday, October 18, from 11:00 am to 3:00 pm. The day's events will include tours of the landscape and a behind-the-scenes peak into the greenhouse led by Arboretum staff (at 11:00, 12:00, and 3:00), a maple tree activity for families (from 1:00 to 3:00), and opportunities to talk with Director Bob Cook and other staff about Arboretum plans and programs. For information or directions, call 617/524-1718 x 100.