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Front cover: Photograph by Mary Rosenfeld.
The genus *Diospyros* is not at present an important genus of ornamental woody plants in North America, and while native persimmons once were valuable fruits in the eastern United States, the fruits produced by *Diospyros* species no longer are important food items in the American home. In the countries of eastern Asia at least two species of *Diospyros* are among the most common trees encountered in doorway gardens and orchards, where they are cultivated for their edible fruits as well as for other uses and for their ornamental beauty. J. J. Rein, a German traveler and author, wrote in 1889 that *Diospyros kaki* Linnaeus f. was "undeniably the most widely distributed, most important, and most beautiful fruit-tree in Japan, Corea, and Northern China." And in Japan, where *D. kaki* is second in importance as an orchard crop only to citrus fruit, the kaki often is referred to as the national fruit (Childers, 1972).

The rarity with which species of *Diospyros* are found in cultivation in cool-temperate North America is partially due to the fact that most are native to regions of tropical and subtropical climate and are not hardy in areas of temperate climate. A member of the Ebenaceae or Ebony Family, the genus contains upwards of 400 species that occur

*Stephen A. Spongberg is a horticultural taxonomist at the Arnold Arboretum. He participated in the Arboretum’s collecting trip to Japan and Korea in the fall of 1977, an experience which intensified his interest in persimmons.*
Typical fruits of the kaki or oriental persimmon grown in dooryard gardens in Korea. Two types are shown, one with longitudinal furrows, the second completely smooth and unfurrowed. Photograph by S. A. Spongberg.
Figure 1. (a-h) Diospyros virginiana: (a) carpellate flower showing leafy calyx lobes, recurved corolla lobes, and staminodia over ovary, from above, × 3; (b) longitudinal section of carpellate flower, × 3; (c) two staminodia, × 6; (d) staminate flower, × 3; (e) longitudinal section of staminate flower showing the stamens and non-functional gynoecium, × 4; (f) functional stamens from staminate flower, × 6; (g) habit of fruiting branchlet of carpellate plant, × 3/8; (h) seeds, × 1. (i, j) D. kaki: (i) habit of fruiting branchlet of carpellate plant, × 3/8; (j) fruit of the cultivar 'Tamopan', × 3/8. Material of Diospyros kaki was kindly supplied by the Henry Foundation for Botanical Research, Gladwyne, Pennsylvania.
in both the Old and New Worlds with the greatest concentrations of species occurring in Madagascar (over 100 species), in Malaysia, and in Africa. The relatively few species native to regions of temperate climate come primarily from eastern Asia, but two species, D. virginiana and D. texana are indigenous to the United States.

A second reason even the hardy exotic and native species are rarely cultivated undoubtedly is related to a general lack of knowledge concerning when and how the fruits can be eaten, stored for future use, and prepared. While I always begin to look for persimmons in local markets and on Arnold Arboretum trees as the fall advances, many persons' experiences with these fruits understandably end when they first bite into a hard, astringent, and puckery persimmon. Such disappointments no doubt have contributed to a lack of demand for persimmons in American markets.

Despite the fancy prices asked for oriental persimmons or kakis in local vegetable stands and supermarkets, I am hopeful this article will stimulate enough interest to encourage readers to buy and enjoy a persimmon or two and to experiment with different ways of serving, and perhaps, preserving them. If native or American persimmons grow nearby, they can be gathered at little or no cost. I also am hopeful that both the oriental and American species will be more widely planted both for their fruits and as biologically interesting ornamentals. To this end, a list is appended of the few nurseries known to me that supply persimmon plants and seeds.

**Characteristics of Hardy Exotic and Native Persimmons**

The genus Diospyros, the name derived from the Greek Dios, of Zeus or of Jove, and pyros, grain, in allusion to the sweet fruits fit for the gods, consists of trees and shrubs, and while some are evergreen plants, all of the species considered below are deciduous. The wood of the majority of species is very hard with a watery sap, and the heart wood is often blackish. The heart wood of several of the tropical species, especially that of D. ebenum Koenig ex Retzius, is the source of ebony, a hard, black wood often used for piano keys and for other inlaid cabinery work and undoubtedly the most widely-known product of this otherwise little-known genus. The bark varies from smooth and exfoliating in the chapote to deeply furrowed and checkered in the American persimmon. The simple, ovate or oblong to elliptic, glossy, dark green leaves are alternately arranged along the branchlets on short petioles, and the pinnately veined blades have entire, rarely ciliate, margins. The flowers, which are produced along the branchlets, usually of the current year's growth, in the axils of the leaves, are generally of two types that are arranged differently. The staminate or male flowers (Figure 1: d, e) are produced in shortly stalked cymose clusters of three or four flowers together, while the carpellate or female flowers (Figure 1: a, b) are generally solitary. The staminate flowers, which measure 6–14 mm. long are borne on short pedicels
that are surmounted by a small, usually four-lobed, greenish calyx, while the four whitish petals form a four-lobed, four-ribbed urceolate corolla that is much the size and shape of the corolla of a blueberry (Vaccinium) flower. Eight to twelve or sometimes sixteen lanceolate stamens (Figure 1: f) are attached to the inner wall of the corolla in one or two whorls, while an ovary is either absent altogether or poorly developed and functionless (Figure 1: e). The carpellate flowers also are produced on short pedicels that terminate in a four-lobed, green calyx, but the calyx lobes are much larger than in the staminate flowers, and leaflike, folded curiously downward along the median line. These lobes alternate with the four recurved lobes of the whitish to yellowish, more or less urceolate corolla and form a small flower whose shape is intriguing, especially when viewed from above (Figure 1: a). Inside the corolla, the globose, centrally located ovary is terminated by four or five styles (Figure 1: b), while curving over the surface of the ovary of most species are eight, silver-hairy, functionless stamens termed staminodia (Figure 1: c).

Like tomatoes, which they often resemble in size, shape, and coloration, the fruits developed from the carpellate flowers are technically berries (Figure 1: g, i, j). The seeds (Figure 1: h) are usually oblong in outline, and flattened, with tan to reddish-brown seed coats. Not all persimmons contain seeds, a phenomenon discussed below. The size and shape of persimmon fruits vary enormously, as does their color, which usually ranges from green through yellow to reddish-orange, brownish, blackish, or purplish when the fruits are ripe and edible.

The sexuality of persimmon trees and the production of persimmon fruits is poorly understood and in need of further detailed study. From what is known, persimmons are a biologically intriguing example of a variable and complex reproductive system. In general, the staminate and carpellate flowers are restricted to different individual plants, and the species is classified as dioecious (i.e., two households, male and female individuals separated). However, in some instances, flowers of both sexes occur on a single individual plant, a few branchlets of an otherwise carpellate tree bearing staminate flowers, or vice versa. Under these circumstances the species is said to be monocious (i.e., one household, separate male and female flowers on the same plant). Yet another added complexity in Diospyros is that some plants consistently produce flowers of both sexes, but others change from year to year, producing flowers of both sexes in one year, but not in another. In still other, rarer instances, a few perfect flowers, that is, flowers that contain both functional male and female parts, may occur on staminate or carpellate plants or on plants producing both carpellate and staminate flowers.

Flowering occurs in late spring and early summer, usually during late May and June in the Arnold Arboretum, and swarms of small honey bees have been noted to work the flowers during this period.
Due to their small size, their nodding position in the leaf axils, and also because of their greenish and whitish to yellowish color, flowers of *Diospyros* are often unnoticed, and it may be only the activity of large numbers of insects visiting the flowers for pollen or nectar or both that draws attention to the fact the trees are in flower.

Initially green, hard, and with their high tannin content, extremely astringent, the fruits and their subtending calyces increase in size as the season progresses and gradually assume their mature color and texture. Depending on the cultivar, the fruits may ripen any time between July and December or even February, and, contrary to some reports, frost apparently is not necessary to reduce astringency or to hasten ripening. As a matter of fact, some cultivars of the oriental persimmon or kaki are sweet and edible when still green and hard, looking like, and with the texture of, green apples.

Ripe persimmons may either contain seeds, or, surprisingly, be totally free of seeds. Fruits containing seeds probably result from the normal sexual process whereby the egg cells contained in the ovules of the ovary of a carpellate flower are fertilized, and seeds and fruit develop. Seedless persimmons, on the other hand, develop without fertilization. The development of fruit without fertilization and hence without seeds is known as parthenocarpy. What factors are necessary to trigger parthenocarpic development in persimmons is not known to me and constitutes another aspect of the variable and complex reproductive mechanisms of the genus. Moreover, circumstantial
evidence involving a presumably totally carpellate tree of *Diospyros virginiana* in the Arnold Arboretum that regularly produces seed-filled fruits, yet is a considerable distance from the nearest staminate tree, suggests the possibility that some seeded fruits also may be produced without pollination and fertilization. The latter type of asexual seed production, termed *apomixis*, is known in some plant families, but has not been documented in *Diospyros* or the Ebenaceae. It might explain some of the variability of some species of *Diospyros*, including the kaki, and help in interpreting taxonomic complexities of the genus.

The species of *Diospyros* known to me to be cultivated in cool-temperate regions of eastern North America are discussed individually below, and the characters of their flowers, fruits, and habit, and their vegetative characteristics have been utilized to construct the following key for their identification.

**Key to the Species of *Diospyros* in Cultivation**

A. Plants usually trees, rarely shrubs; leaf blades membranaceous to subcoriaceous, (1.4–)4–16 (–20) cm. long, distinctly petiolate; flowers appearing after the leaves; anther sacs dehiscent by long, longitudinal slits; carpellate flowers with staminodia; fruits reddish through orange to yellow or yellowish-brown, sometimes green or purplish, rarely black.

B. Branchlets ± slender, glabrous or with grayish pubescence; staminate flowers 6–10 mm. long at anthesis; pedicels of carpellate flowers 2–7 mm. long, the corolla 5–12 mm. long; fruits to 4 cm. in diameter (very rarely larger).

C. Petioles (0.5–)1.8–3.2 (–4.7) cm. long; staminate flowers 8–10 mm. long at anthesis; corolla of carpellate flowers ca. 12 mm. long, the four or five lobes 7–8 mm. long; mature berries reddish-orange to pinkish-yellow, rarely purplish or black, to 4 cm. (or rarely to 7.5 cm.) in diameter; seeds 11–17 mm. long.  

1. *D. virginiana*.

C. Petioles 0.7–1.2 (–2.0) cm. long; staminate flowers 6–7 mm. long at anthesis; corolla of carpellate flowers ca. 5 mm. long, the four or five lobes 2–3 mm. long; mature berries yellowish-brown to bluish-black, to 2 cm. in diameter; seeds 8–12 mm. long.  

2. *D. lotus*.

B. Branchlets ± stout, variously fulvous-pubescent; staminate flowers 11–14 mm. long at anthesis; pedicels of carpellate flowers 8–32 mm. long, the corolla ca. 15 mm. long; fruits to 7.5 cm. in diameter.  

3. *D. kaki*.

A. Plants often shrubs, sometimes small trees; leaf blades coriaceous, (1.4–)2.4–4.8 cm. long, subsessile; flowers appearing with the expanding leaves in spring; anther sacs dehiscent by short, apical slits; carpellate flowers lacking staminodia; fruits black.  

4. *D. texana*.


The American persimmon, common persimmon, simmon, or possum wood is native to a wide area of the eastern United States, from southern New England and Long Island south to southern Florida, and westward into eastern Iowa, Kansas, Oklahoma, and eastern
The fruits of the American persimmon (Diospyros virginiana) are an important item in the diets of many small mammals, including flying squirrels as shown here in a plate from Mark Catesby's The Natural History of Carolina, Florida, and the Bahama Islands (vol. 2, pl. 76, 1754).
The thick, "alligator-skin" bark of the American persimmon (Diospyros virginiana) is a good identification characteristic for the species as well as a noteworthy ornamental attribute. Photograph by R. E. Weaver.

Texas. Infrequent in southern New England, it reaches the northernmost limit of its natural distribution at Lighthouse Point in New Haven, Connecticut, but it is hardy further north and can be cultivated successfully throughout Rehder's Zone 4 (USDA Zones 5a and 5b). Common south of New England both east and west of the Allegheny Mountains, Diospyros virginiana is particularly plentiful in the southeastern states where it often invades fallow fields and forms dense thickets along roadsides, spreading by means of black, fleshy, stoloniferous roots. The trees usually grow in sandy, well-drained soils, but also occur in rich, wet soils of bottomland forests.

An extremely variable species over its wide range, known, for example, to have chromosome numbers of both \(2n = 60\) and \(90\), the American persimmon occasionally develops a shrublike habit, but generally is a small tree to 10 or 15 meters, rarely to 35 meters, often with spreading and pendulous branches. The bark, hard and of a brownish or blackish color, is irregularly and deeply fissured into small, blocklike plates, and resembles that of the flowering dogwood, Cornus florida L. Recognition of the species in winter is made easier by the characteristic bark pattern; the lack of terminal buds on the branchlets as well as the solitary bundle scars centered in the leaf scars are other useful identifying characters when the trees are leafless. Variation in plant habit, in the pubescence of the branchlets and leaves, in leaf size and shape, and in fruit size, shape, and color has provided characters on which several varieties and forms of
Diospyros virginiana have been based. Most of these taxa are of localized occurrence on the western and southern edges of the species range. A summary of these taxa is not given here, but has been presented elsewhere (Spongberg, 1977, pp. 154, 155).

The fruits of the American persimmon vary in size from that of a small cherry to that of a large plum (Sargent, 1894, p. 10, footnote) about 4 cm. in diameter, and in color from orangish to pinkish-yellow, often with a grayish bloom when ripe, to dark purple or bluish-black in f. atra Sargent. The fruits are an important food to many forms of wildlife, and opossums, racoons, and squirrels often strip the trees of any fruits remaining on the branchlets during the winter months. The fruits also were important food items to the Indians of eastern North America as well as to the first European settlers and explorers. Easily grown from seed, American persimmons were sent back to England and established in English gardens some time before 1629 (Sargent, 1894).

The Spanish explorer Don Fernando de Soto learned of the food value of the persimmon from the Indians of Florida in 1539 and probably was the first European to write about the fruit. In the next century, Captain John Smith, among others, took an interest in the putchamins of the Indians and likened them to medlars (Mespilus germanica L.), noting that "if it not be ripe it will drawe a mans mouth awrie with much torment; but when it is ripe, it is as delicious as an Apricock" (quoted in Bailey, 1898, p. 172). The name putchamin, L. H. Bailey suggests, probably is a phonetic rendering of the Indian name for the plant.

Hedrick states that "of the several plants used by the Indians, two, the persimmon and sassafras, were of importance to the [colonists] of Maryland and Virginia" (1950, p. 115). European settlers in the southern states prepared a persimmon or simmon beer and used the fermented juice to distill an apparently very good brandy. In Pennsylvania, Isaac Bartram (1772) wrote a treatise on the preparation of persimmon wine. Persimmons also were eaten when ripe, or prepared in puddings, breads, or as preserves, while dried persimmons were stored and eaten as we eat figs and dates. The wood of the common persimmon has been valued for its hardness and density and has been used locally for innumerable items; it once was preferred for shuttles over any other American wood.

During the nineteenth and early twentieth centuries, considerable interest centered on the American persimmon as a potential orchard crop, and numerous cultivars, selected for fruit color, taste, size, and early maturation, were selected from wild populations and named. Lists and descriptions of many of these cultivars are included in the publications of Bailey (1925), Fletcher (1928, 1935), Troop and Hadley (1896), and Watts (1899). While interest in cultivars of Diospyros virginiana has continued to the present day, primarily in the Midwest (see the references by McDaniel, and Brooks & Olmo,
to my knowledge American persimmons never have been grown successfully on a commercial scale. Undoubtedly, this in large part is due to the fact that the American appetite for persimmons is limited, and the California-produced oriental persimmons satisfy the current market demand. Nonetheless, local native and occasional cultivated trees help to satisfy those of us who enjoy our native persimmon.

Over and above its colorful small fruits, American persimmon is an attractive ornamental due to its graceful shape, its lustrous green leaves that turn scarlet in the fall, its adaptability to various soil types, and its general resistance to insect pests and diseases. Of considerable value to wildlife, American persimmon also has been suggested for planting in erosion control programs (Van Dersal, 1939).


The date plum, Diospyros lotus, is very similar to the American persimmon in its morphology and may be the closest living relative of our native species. The two can be distinguished by the characters contrasted in the key above, but in all likelihood the date plum will be seen growing in North America only in botanical gardens and arboreta; no nurseries have been located that offer plants of the date plum, although at least one nursery offers seed. In the Old World, D. lotus is very widely distributed as a native, naturalized, or cultivated plant from southern Europe, the Caucasus, and Asia Minor eastward through the northwestern Himalayan region, and into China, Korea, and Japan. Cultivated since ancient times, the natural occurrence and original distribution of D. lotus no longer are possible to ascertain. In England and other areas of northern Europe, the date plum has been cultivated as an ornamental since the sixteenth century (Carder, 1975). In North America, the date plum is hardy at least as far north as the Boston area. It probably was introduced into North America when seeds were received at the Arnold Arboretum in 1884 from the Imperial Botanical Garden at St. Petersburg.

A small tree, usually with a rounded crown, that with age may attain 30 meters in height, Diospyros lotus is valued in Asia for its small, yellowish-brown to bluish-black fruits, which have a taste similar to dates and often are dried for winter consumption. The Chinese name for the species, Ghae tsao, signifies black date (Meyer, 1911). The fruits attain a diameter of about 2 cm., and those I have examined or eaten always have been almost completely filled with brown, oblong, and flattened seeds. Meyer (1911) reported a seedless type from China. The date plum is especially valued in eastern Asia as an understock onto which scions of the oriental persimmon are grafted.

Diospyros lotus grows, either as a native or naturalized plant, in rocky, protected ravines, along mountain streams, and on rocky
An old tree of Diospyros lotus approximately 26 meters in height growing at the foot of Fei-Yüeh-ling, Ching Chi Hsien, western Szechwan Province, China. Photograph by E. H. Wilson, August 3, 1908.
slopes. In Japan I saw a fruiting and healthy-appearing tree growing from a crevice in a rock outcrop on the Pacific Ocean beach at Matsushima. The date plum may prove of value as a small ornamental tree in coastal areas where salt spray limits the effective use of other ornamental species.


The kaki, Chinese persimmon, Japanese persimmon, or oriental persimmon, with fruits sometimes the size of large tomatoes, is the persimmon that occasionally appears in American markets and abounds in markets in Japan, Korea, and China during the late summer and fall and into winter. Like the date plum, kakis have been cultivated for such an extended period of time that the natural species range has become totally obliterated. Grubov (1967), a Russian botanist, has suggested that the wild progenitor of the cultivated forms was native to northern China, while Rehder and Wilson (1916) state that *Diospyros kaki* var. *sylvestris* Makino, the reputed wild form of the kaki, with smaller, yellow, and often hairy fruits, is "abundant in the mountains of central and western China up to 4,000 feet altitude, where it forms a large tree 50 or 60 feet tall."

Due to the tremendous morphological variation exhibited by *Diospyros kaki*, botanists have questioned whether the cultivated forms might be of hybrid origin with two or more species in their genetic background (Hume, 1914). Other botanists have speculated that *D. kaki* might best be divided into more than one species (see, for example, Sargent, 1894, p. 4, footnote). In a recent article F. S. P. Ng (1978) suggests that domesticated kakis arose from *D. roxburghii* Carrière, a taxon of subtropical Asia that taxonomists often have included within *D. kaki*. Like *D. kaki* var. *sylvestris*, *D. roxburghii* differs from kakis primarily in its hairy fruits, and Ng asserts that it is possible "*D. kaki* [2n = 90, a hexaploid] arose directly from *D. roxburghii* [2n = 30, a diploid] through polyploidy, cultivation, and selection for smooth-skinned fruits."

That selection for differing fruit types has occurred is evidenced by the upwards of a thousand cultivars or forms of the kaki that are cultivated in Asia and maintained by ring-budding or grafting, primarily on date plum rootstock. Ranging in size from about 2 cm. in diameter, the size of a small plum, to about 8 cm. in diameter with a weight of over a pound, kakis can be astringent or sweet, seedless or seeded, and conical, round, flattened, or almost cubical in shape, and some cultivars have longitudinal or horizontal ridges or furrows. The 'Tamopan' or grindstone persimmon (Figure 1: j) is one of the bizarre forms, with an equatorial to near basal furrow, while the more regular, oblong-conical fruits of 'Hachiya' with rounded apices terminating in small, black, stylar scars, are probably the most common kaki in American produce markets.
As noted previously, the astringency of persimmons is a variable character caused by tannins that, depending upon the cultivar, may or may not be present when the fruits are green and hard. Some forms never lose their astringency, even when soft. The tannin-bearing cells are scattered in strands throughout the flesh of the fruit, and the tannin is associated with a mucilage-like carbohydrate that coagulates and “absorbs” the tannin during ripening. Oxidation of the absorbed tannin causes the tannin-filled cells to turn red in some cultivars; the strands of cells are then easily distinguished (Condit, 1919). Kaki fruits are also very high in vitamin C and sugar content (glucose ca. 18%), the latter a variable character, like astringency, but have relatively low percentages of protein and fat (Condit, 1919). In Japan, hard, astringent persimmons were sometimes placed in used sake casks or tubs to ripen, and according to Rein (1889, p. 88) these “tub persimmons”, which absorbed the flavor and perfume of the sake, were considered a delicacy. However, the Japanese apparently often ate the hard, unripened fruit, a fact that prompted Charles Sargent to observe that the kaki was “consumed in immense
Diospyros kaki. Top: Six small dried persimmons with the crystallized sugar from which small cakes are made locally. Obtained in Ssu shui, Honan Province, China, where the local name, Hui sze ping, is translated “boil-proof dried persimmon”, referring to the fact that the fruit retains its shape even when boiled a long time. Bottom: One of the largest dried persimmons of China, most of the fruits measuring 10 to 11 inches in circumference. Formerly, fruits of this type were given as a tribute to the Imperial Court at Peking and sold at more than twice the amount paid for other varieties. The Chinese name, Ching sze ping, means “green dried persimmon”. Photographs and notes by F. N. Meyer, April 21, 1914.

quantities by the Japanese, who eat it, as they do all their fruits, before it is ripe, and while it has the texture and consistency of a pavingstone” (1894a, p. 50).

Unlike Americans, who regard the kaki as a fresh fruit to be eaten when ripe or rarely frozen for later use, the peoples of eastern Asia for centuries have dried the fruits for storage and use during the winter and early spring months. The persimmons, either whole or sliced, and occasionally skinned, are dried in the sun until their flesh attains the consistency of a dried fig. I have seen sliced persimmons drying on wooden platforms on rooftops in Korea, while a photograph taken by Frank N. Meyer, Agricultural Explorer in China for the U.S. Department of Agriculture early in this century, shows the fruits strung on stout cords and suspended from a simple scaffold to dry in the sun and wind.

As they dry, or during a curing process after drying, sugar crystallizes on the surfaces of the fruits that are high in glucose content. By the time they are ready for storage or shipment, the flesh has turned blackish, and the sugar coating the surface is similar in texture to confectioner's or powdered sugar (S. Y. Hu, personal communication, and Meyer, 1915). Depending on the cultivar, the surface of the dessicated fruit may be evenly coated with sugar, or the sugar may appear in irregular scablike patches. Dried fruits, which become flattened if suspended on a cord while drying or which may be flattened mechanically after drying, are known as pressed persim-
mons; these are packed in boxes in Japan, while in China they often are stored on the cords. Dried kakis are eaten out of hand or stewed much the same way we stew dried apicots and prunes. In China they are a particular favorite during the New Year celebration in February. Once the spring rains begin and atmospheric humidity increases, the surface sugar liquifies, and the dried fruits no longer are considered edible (S. Y. Hu, personal communication).

Meyer’s photographs also document another form in which the white, crystallized sugar is prepared for future use. In certain areas of China, the sugar is scraped from the surfaces of the dried kakis and compacted into thin, round cakes or loaves, while sugar of the highest quality is pressed into molds to produce ornamented tablets. The Chinese characters on the surface of the tablets photographed by Meyer (see page 306) signify “double happiness”: couples engaged to be married often present these tablets to friends from whom they have received wedding gifts. The tablets of sugar also are served as one of the eight comestibles offered with tea during the first course of traditional Chinese banquets (S. Y. Hu, personal communication).

The kaki is grown in Asia for more than its edible fruits. Numerous medicinal properties have been attributed to different parts of the plants. The green unripe fruits of what in China is known as the oil persimmon, Diospyros kaki var. sylvestris, the reputed wild form of the domesticated kakis, are used to make a varnish oil that renders hats and umbrellas waterproof (Wilson, 1913, p. 73). In Japan, Shibu, a highly astringent, milky, light or dark gray fluid rich in tannin, is prepared from unripe kakis and date plums during the summer and is used to toughen paper, wood, and fishnets. It also is required in one stage of the complicated process of making fine Japanese lacquer work and in the preparation of sake and certain dyes. Rein (1889, p. 265) notes that in Japan the kaki is a favorite subject for bonsai.

Sir Joseph Banks, botanist on Captain James Cook’s first voyage around the world, is credited with the introduction of Diospyros kaki into Europe, while the first trees of the kaki in North America probably were grown from seeds obtained in Japan by Commodore Perry in 1856. Likened by some to an apple or pear tree in size and shape, but with larger, lustrous green leaves that turn scarlet in the fall, when it is particularly handsome with its brilliant fruits, the kaki was considered by Sargent to be the most beautiful of any fruit tree of cold temperate climates. Knowing that the kaki is hardy in Peking, Sargent (1894a) speculated that it would be hardy in New England “if plants of a northern race can be obtained.” Unfortunately, kakis, even some grown from seed obtained near Peking, never have survived in the Arnold Arboretum for longer than a few growing seasons. Young trees are growing on Martha’s Vineyard, and beautiful old trees (one the ‘Tamopan’) growing at the Henry Foundation for Botanical Research attest to their hardiness in the Philadelphia area.
Above: A basketful of pressed dried persimmons (Diospyros kaki) offered for sale in a market in Peking. Photograph by F. N. Meyer, March 22, 1913.

Right: Square tablets of persimmon sugar obtained from the dried fruits of a variety with the Chinese name, Pen sze sse. The Chinese characters signify “double happiness”. Photograph by F. N. Meyer, Peking, April 19, 1914.

According to fairly recent statistics (U.S.D.A., 1975), cultivation of kakis for the American market is totally confined to California, where on the average only 1,910 tons (compared with 20,000 tons for dates and 112,000 tons for plums) were harvested annually between 1970 and 1974. We hope that seeds collected from persimmons in a very cold district of Korea during the Arnold Arboretum collecting trip in 1977 will provide at least one reliably hardy strain for New England.


Unlike the carpellate flowers of the American persimmon, the date plum, and the kaki, carpellate flowers of the chapote, black persimmon, or Mexican persimmon lack sterile stamens or staminodia. Moreover, the flowers appear on the branchlets of the previous year’s growth, and the anthers of the staminate flowers open by short, apical slits, while those of the other species dehisce by longitudinal slits that continue down the entire length of the anther. These dif-
ferences help to distinguish *Diospyros texana* from the other species of the genus and were considered by John K. Small of enough significance to merit placing *D. texana* in a separate, monotypic genus, *Brayodendron*. However, most botanists have continued to regard the chapote as a unique species of *Diospyros*.

The chapote further differs from the other species discussed in this article in its shrubby, often many-stemmed habit, although it may develop into a single-stemmed, twiggy tree that occasionally reaches 25 meters in height. The bark of the chapote also is distinctive; it is smooth, light reddish-gray or reddish-brown, and the outer layers exfoliate in irregular sheets, exposing the smooth, gray, inner bark. In appearance, it is reminiscent of the mottled bark of the crape-myrtle (*Lagerstroemia indica* L.) and is one of the characters that recommend the chapote as an ornamental plant.

Native to the United States, the chapote is distributed in central and western Texas and ranges southward into the Mexican states of Coahuila, Nuevo León, and Tamaulipas. Over its range it grows in rich moist soils of bottomlands as well as on dry rocky mesas and in isolated canyons. The small, hairy, black fruits mature to 2.5 cm. in diameter. When mature, they are sweet but rather insipid. They leave an "indelible black stain upon everything with which [they] come in contact" (Standley, 1924, p. 1127) and have been used by Mexicans of the Rio Grande Valley to dye sheepskins.

Sargent (1894, p. 12) notes that this species should prove valuable as a cultivated ornamental for its attractive, lustrous foliage, the interesting black fruits of the carpellate plants, and its mottled bark. It is recorded as cultivated in Virginia and in Pennsylvania, and although it has not yet proven hardy at the Arnold Arboretum, it may be hardy as far north as southern New England. Trials of *Diospyros texana* grown from seed collected on the northern edge of its range in Texas may provide plants hardy in Boston; seed would be gratefully received by the Arnold Arboretum staff for this purpose.

### Eating Persimmons

The kakis I have found to be available in Boston markets should be fully ripe before eating; at this stage the fruit is soft to the touch over its entire surface, the skin is slightly loose and feels as if it could be slipped off the flesh, and the green calyx can be pulled off with relative ease. Likewise, my experience with American persimmons is that they should be equally as soft when eaten. Since all the American persimmons I have gathered have been filled with seeds, I have seeded them and used the pulp in persimmon pudding, served with heavy cream or ice cream. I mostly enjoy eating kakis out of hand, but the flesh can also be used in recipes for pudding, ice cream, and bread; I have always wanted to experiment with a kaki chutney.

While the kakis in markets usually are hard, they will ripen with
time at room temperature. But don’t be too eager to bite into one or you may never be tempted again. It has been suggested that putting persimmons in a plastic bag with an apple will hasten ripening. Recipes using persimmons are not found in many standard cookbooks. The Joy of Cooking (Rombauer & Becker, 1964) includes recipes for ice cream, an exceptionally good pudding, and Japanese persimmon salad, and Stocking Up (Stoner, 1973) offers notes on freezing persimmon pulp for future use. The U.S.D.A. Farmers’ Bulletin 685 (Fletcher, 1928, 1935) contains the widest variety of recipes for persimmon pulp, including recipes for bread, crumpets, griddlecakes, persimmon-peanut muffins, persimmon cake, pudding, ice cream and sherbet, persimmon taffy and fudge, and persimmon whip. Fletcher notes that “since heat makes the astringency . . . more apparent, it is always well to add one-half teaspoon of baking soda to each cupful of persimmon pulp in all recipes where the fruit is subjected to heat” (1928, p. 22). The soda is not necessary if the fruits are completely ripe.

References
Appendix: Nursery Sources for Diospyros

The following nurseries are known to me to have offered Diospyros virginiana plants in recent catalogues. Only one, Mellinger's Nursery, has offered both D. virginiana and D. kaki. Before ordering from any of the nurseries, written inquiry should be made to determine selling practices and availability.

Boyd Nursery Company, Inc., P.O. Box 71, McMinnville, Tennessee 37110
Brimfield Gardens Nursery, Rocky Hill, Connecticut 06067
Greenbrier Farms, Inc., 201 Hickory Road, West, Chesapeake, Virginia 23322
Hess' Nurseries, Inc., P.O. Box 326, Route 553, Cedarville, New Jersey 08311
The Home Nursery, C. S. Ingels & Sons, P.O. Box 148, Route 17, Lafayette, Illinois 61449
Mellinger's Nursery, 2310 West South Range, North Lima, Ohio 44452

The following nursery offers seed of Diospyros kaki, D. lotus, and D. virginiana:

F. W. Schumacher Co., Sandwich, Massachusetts 02563

These lists undoubtedly omit many nurseries that offer persimmon plants or seeds; their exclusion is by no means intentional.
Collinsonia canadensis from Linnaeus's Hortus Cliffortianus (pl. 5, 1737). The genus Collinsonia, comprising a few species of herbaceous plants entirely North American in distribution, was named by Linnaeus in honor of Peter Collinson, the sponsor of John Bartram and other early American plant collectors.
When the Pilgrims landed in America in 1620, though the coast was “stern and rock-bound,” and the immediate vicinity “full of woods and thickets” (Bradford, 1897), the Northeast was by no means covered by forest. As Betty F. Thomson points out, almost without exception the earliest explorers and settlers commented on the treeless areas they saw, from the Saco Valley south as far as and beyond the Hudson, and up into the river valleys of New York State. Verrazano, travelling from Narragansett Bay in 1564, reported “open plains twenty-five or thirty leagues in extent, entirely free from trees or other hindrances.” In what are now our Southern states the same open plains existed.

These great tracts had been cleared by the Indians for their farming, and the underbrush in the forests was set on fire every spring to improve the growth of grass necessary to game animals.

Edward Hyams observes that had the Pilgrims made their landfall further north, in Maine, they would have found cultivated orchards of apples and pears, planted a good ten years before their arrival by the Baron de Saint-Castine and his French colony. Indeed, the French in Canada initiated the flow of plants eastward. Many

Cora L. Warren is an active volunteer at the Arnold Arboretum. She has been instrumental in putting on several popular exhibits, including her most recent, “Spreading Roots”. Mrs. Warren is an avid gardener, both in Massachusetts and Ireland.
of the plants the English settlers found in New England already were growing in the Jardin du Roi in Paris.

Myth and fancy have long been a part of our image of our forefathers. Research into the horticultural practices of the time and attention to the revelations in contemporary accounts help to dissipate some of the untruths.

Picture, if you will, what might be regarded a typical early New England scene. A log cabin stands in a clearing, its doorway framed on one side by a lilac bush, and on the other by a forsythia. Near the house is a pond, over which a weeping willow droops. A pasture stretches beyond, bright with dandelions, daisies, and red clover. A house mouse sits by the cellar door, hoping for a handout and keeping a wary lookout for the red fox skulking in the wood.

This nostalgic picture is false in every particular. The scene described could not have been found in its entirety before the nineteenth century.

Log cabins did not exist in the first English colonies. They first were built by the Swedish in Delaware between 1637 and 1665. Most of the houses built in Boston by the first English settlers were made from boards cut from the black locust tree (Robinia pseudoacacia) (Miller, 1763).

As for the plants mentioned, the common lilac (Syringa vulgaris) was the earliest plant to reach this country from Europe, but it is not native. Introduced to Europe by way of Turkey during the reign of Queen Elizabeth, its date of entry into America is in some dispute. Lilac is mentioned growing in New Amsterdam in 1655. It was a much loved shrub, one of the very few imported plants that was not thought to have medicinal value. In the next century, covered wagons carried lilacs to the Far West.

Forsythia (Forsythia suspensa) was a much later introduction. Originally from China, it was introduced from Japan into Holland in 1833 by Verkerk Pistorius. It reached England in 1844. American horticulturists learned of it in 1846 from British journals and were quick to import it.

Peter Collinson, the Quaker botanist, recorded the arrival of the weeping willow (Salix babylonica) in England in 1740: “Mr. Vernon, Turkey merchant at Aleppo, transplanted the Weeping Willow from the River Euphrates and brought it with him to England. It was planted at his seat at Twickenham Park where I saw it growing in 1748. This is the original of all the Willows in England.” According to a possibly apocryphal, but pleasant story, Alexander Pope, the “Wicked Wasp of Twickenham”, planted a willow from a green withe on a package of figs sent from Smyrna by his friend Lady Suffolk. The tree flourished, and the story has it that a young British officer carried a twig to America, where it was planted in Abingdon, Virginia, and gave rise to most of the weeping willows in the United States.
The field strewn with familiar wild flowers certainly had wild flowers, but they could not have been the ones listed. Dandelions are not native, but escapes from cottage gardens, where they were grown for “sallets”. Daisies (*Chrysanthemum leucanthemum*) also were garden escapes. Red clover (*Trifolium pratense*) came by ship with the cattle, as did Queen Anne’s lace (*Daucus carota*), chicory (*Cichorium intybus*), most weedy buttercups (*Ranunculus*), orange hawkweed (*Hieracium aurantiacum*), and a host of others. John Josselyn recorded in 1672 “some forty kinds of weeds sprung up since the English planted and kept cattle in New England.” The expectant house mouse also came with the cattle. The red fox, although indigenous to the Far West, was brought to the eastern seaboard by English gentry for hunting.

Contrary to a widely held image of the native American Indians as painted savages, tomahawks raised high, the Indians met by the Pilgrims were as often curious, even helpful, as hostile. The first Thanksgiving feast was shared by Pilgrims and Indians.

Many of the Indians in the North had gardens of a kind, where they grew maize, beans, pumpkins, squash, tobacco, and a few flowers, including roses and sunflowers. They knew how to force seeds into germination by sowing them in a compost of powdered, rotten wood placed in flat boxes of bark, which were hung in the smoke of the cooking fire. They also were aware that it was important to grow plants in isolation to obtain a pure strain.

Corn, when planted by hand according to the Indian method, requires neither draft animals nor farm equipment: “Their manner of planting is this, they make a hole in the earth with a sticke, and into it they put foure graine of corn and two of beanes . . . their women and children do continually keepe it with weeding” (Thomas Harriott, “A briefe and true report of the new found land of Virginia”, 1590). William Bradford relates how the Puritan settlers were taught how to plant corn by Squanto, an Indian who had been to England and could speak English. “Also he tould them excepte they gott fish & set with it (in these old grounds) it would come to nothing” (Bradford, 1897). It has been claimed that the Puritans might well have starved without the native knowledge of planting corn by hand (Hedrick, 1950). Indeed, what seed had been brought from England failed the first year: “Some English seed they sew, as wheat & pease, but it came not to good, eather by the badness of the seed, or lateness of the season, or both, or some other defecte” (Bradford, 1897).

Pumpkin or pompion (*Cucurbita pepo*) was another plant among the Indians’ principal crops which the English settlers immediately adopted. From “The Forefather’s Ballad”, handed down from early days in the Plymouth Colony, comes a plaintive cry:

We have Pompion at morning and Pompion at noon,
If it were not for Pompion we should be undone.
One of the palo verdes (Parkinsonia aculeata) from Linnaeus's Hortus Cliffortianus (pl. 13, 1737). These shrubs or small trees of the legume family are native to Mexico and southern Arizona, but they are widely cultivated throughout the desert regions of the southwestern United States and have become naturalized in many areas. The genus was named by Linnaeus in honor of John Parkinson, one of the foremost English herbalists.
For all the knowledge gained from the Indians, the original settlers were not as proficient farmers as one might suppose. According to the anonymous author of American Husbandry (1775), the "embattled farmers" were "the greatest slovens in Christendom." Once a field had been cleared and exhausted, it was far easier to clear more land than to go through the arduous process of renewing the soil. The destruction by English farmers of the primeval forests continued in far greater measure what the Indians had begun. The truth of the matter is that to the early settlers there seemed to be an unlimited supply of land; at least so they acted. George Washington described the problem further in a despairing letter to Arthur Young:

... the aim of the farmers in this country, if they can be called farmers, is, not to make the most they can from the land, which is, or has been cheap, but the most of the labour, which is dear; the consequence of which has been, much ground has been scratched over and none cultivated or improved as it ought to have been; whereas a farmer in England, where land is dear, and labour cheap, finds it his interest to improve and cultivate highly, that he may reap large crops from a small quantity of ground.

The German farmers in Pennsylvania, more frugal and efficient by far than the English, were an exception.

In the South the land was even more acutely decimated by the "one crop" system. Tobacco, cotton, and indigo plantations exhausted the soil.

It was not only farming that changed the virgin territories. The settlers built their ships from white oak (Quercus alba), and their fences and furniture from the eastern red cedar (Juniperus virginiana). They made their torches from the pitch in pines, their brooms and wheels from pignut (Carya glabra), the black powder for their muskets from the pussy willow (Salix discolor), and beer from the sweet birch (Betula lenta). Many species suffered for their utility. Flowering dogwood (Cornus florida) was badly decimated in New England because of the excellence of its wood for spindles. By 1750 the Atlantic white cedar (Chamaecyparis thyoides) had become extremely scarce; the whiteness of its wood made it attractive for flooring, and whole logs often were used in house building.

The great stands of white pine (Pinus strobus), some containing trees 150 feet high, were the worst to suffer. England needed masts for her navy, and paid as much as one hundred pounds apiece for the taller trees. Indeed, the quarrel between England and her American colony over the ownership of the great white pine forests acerbated an already tenuous relationship. The English marked the trees suitable for masts with a blaze known as the King's Broad Arrow, reserving the trees for the Crown, and severely punished those pioneers who ignored the hated sign. The pioneers retaliated by dressing
as Indians, who were exempt from the restriction, and cut down the trees at night. The revolutionaries clad in Indian garb who threw the tea into Boston Harbor thus had a precedent of many years standing. The importance of the disputes over the white pine is memorialized in the revolutionary flag of Massachusetts, which depicts a single white pine.

An interesting aspect of the early settlers' use of plants is the role played by plants in the slowly emerging discipline of medicine.

The Puritan housewife, living in a totally religious culture, still held to the medieval belief that God had created all plants for the use of mankind. Thomas Hooker (1586–1647), minister of Hartford and one of New England's most powerful preachers, elucidated this doctrine in "The Application of Redemption" (1659): "For all outward things are for the body, the body for the soul, the soul is nextly for God."

Herbals were indispensable to the pioneer household. The best were those by John Gerard and John Parkinson. Gerard, Warden of the Company of Barber-Surgeons in London, published his herbal in 1597; it was corrected and amplified in 1633 by Thomas Johnson. Gerard had a wide acquaintance among plant collectors. Parkinson, botanist and apothecary, published Paradisi in sole, paradisus terrestris in 1629. (The title, literally, "terrestrial paradise of the park in the sun", is a pun on the author's name (Henrey, 1975).) The first known copy of Parkinson's herbal in New England was in the library of Leonard Hoar, President of Harvard College. After Hoar's death, this copy was given to Increase Mather, and his son Cotton Mather.

Closely following the precepts of these herbals, the housewife grew in her garden plot such plants as comfrey (Symphytum officinale) for bruises and broken bones, false hellebore (Veratrum viride) for scurvy, borage (Borago officinalis) — "Borage always brings courage," as Parkinson translated Pliny — and a host of other dubious remedies.

However, a new concept in the curing of disease was beginning to be explored. The Doctrine of Signatures no longer was in high repute, and it was believed that there might be a universal panacea for all mortal ills. Sassafras (Sassafras albidum) was believed by both the Indians and the newly arrived settlers to be this universal remedy. It was one of the first exports sent by Captain John Smith from the Jamestown Colony. In 1602 the price of sassafras in England was 336 pounds sterling the ton. Merchants of Bristol, England, sent two ships across the Atlantic in 1603 for the sole purpose of gathering sassafras, finally finding it near Long Island Sound. Thomas Jefferson regarded it as a purely ornamental plant, so presumably by his time belief in its curative powers had been abandoned.

Despite what might seem in some aspects a bleak picture of ignorance, cupidity, and bad land management, the discovery and colonization of America resulted in an exchange of flora between nations which benefited mankind both horticulturally and aesthetically.
Sassafras (Sassafras albidum) and "The Tyrant" (actually the eastern kingbird, Tyrannus tyrannus), from Mark Catesby's The Natural History of Carolina, Florida, and the Bahama Islands (vol. 1, pl. 55, 1754). Many of Catesby's plates include both flowers and fruits on the same branch, which at least in the case of the sassafras is unlikely to occur in nature. As shown in the legend, Catesby compared sassafras to the cornelian cherry (Cornus mas), a plant which it superficially resembles in flower.
When one considers that the voyage from England to America and back, even as late as 1702, when the first Atlantic mail service was inaugurated, took anywhere from 90 to 116 days, it is astounding how many plants were imported and exported. Only about six American plants were in cultivation in England before 1600. By 1700 there were 150, and in the next century hundreds more. Science universally was regarded as having no concern with political squabbles, so the constant wars of the first two hundred years had little effect on the movements and affairs of botanists, except for the additional risk of loss of material at sea.

Because of the depletion of English forests, trees were the original exports. Northern white cedar (*Thuja occidentalis*) was the first tree sent to Europe from America; according to Alfred Rehder, it is probable that it first was sent to France in 1536. It reached England sometime between 1536 and 1596. The only pine growing in England at this period was the Scotch pine (*Pinus sylvestris*). By 1743 the pitch pine (*P. rigida*), and the scrub pine (*P. virginiana*), and other conifers such as the balsam fir (*Abies balsamea*), the Atlantic white cedar (*Chamaecyparis thyoides*), the eastern red cedar (*Juniperus virginiana*), and the eastern hemlock (*Tsuga canadensis*) had all crossed to England.

As early as 1670 the English introduced Mediterranean fruits into the southern states. Oranges, lemons, apricots, limes, and pomegranates were grown at the Charles Town Colony. Some fruits from Europe had reached America before the English. Peaches were introduced by the Spaniards into Florida. The Indians became so fond of the fruit that by the time of the first English settlements, peach trees were found growing in Indian villages as far north as they would grow, and west to the present states of Arkansas and Texas. Peach brandy was one of the first drinks made by the colonists.

Many of the trees we now take for granted as our own are not native. The “Tree of Heaven” (*Ailanthus altissima*), the white poplar (*Populus alba*), the European weeping birch (*Betula pendula*), the horse chestnut (*Aesculus hippocastanum*), and the Norway maple (*Acer platanoides*) all were sent from England in the late seventeenth and early eighteenth centuries.

The peanut (*Arachis hypogea*) which originally was carried from South America to the Old World tropics by Portuguese sailors, was brought to Virginia on the slave ships from Africa. Other ethnic groups increased our horticultural stock. Homesick Scots introduced ling (*Calluna vulgaris*). The Netherlands brought a wide range of flowers, including numerous sorts of roses, crown imperials (*Fritillaria imperialis*), lilies (*Lilium candidum*), peonies, and, of course, tulips.

Besides the importations by the various ethnic groups, and the unnamed settlers and housewives, there were individuals who earned a place in history by their contributions to the exchange of plants. The
two John Tradescants, father and son, can be regarded England's first plant explorers. John the Elder, who died in 1638, had travelled to Russia, Algeria, and Holland as gardener to Charles I. John the Younger, sent to Virginia by his father in 1637, also made two later journeys, bringing home a wide variety of material. The American columbine (*Aquilegia canadensis*), the cardinal flower (*Lobelia cardinalis*), beebalm (*Monarda fistulosa*), sundial lupine (*Lupinus perennis*), the New England aster (*Aster novae-angliae*), red-osier dogwood (*Cornus sericea*), and a spiderwort, which Linnaeus named *Tradescantia virginiana* in the elder Tradescant's honor, were all growing in the Tradescant garden by 1656. The younger Tradescant also introduced to England the tulip tree (*Liriodendron tulipifera*), the American plane tree (*Platanus occidentalis*), and the red maple (*Acer rubrum*).

Linnaeus (Carl von Linne, 1707–1778), the Swedish botanist, was the first to devise a usable and uniform system of binomial nomenclature, as well as a readily accessible system of classification. His system brought order out of a chaos that had obtained since the days of Dioscorides, and was of immeasurable value to collectors like Mark Catesby, and John Bartram, both of whom were among his correspondents. Linnaeus also named many plants. Several early American plant explorers, and their European correspondents and patrons, are memorialized in his generic names: for example, *Banisteria*, *Collinsonia*, *Fothergilla*, *Kalmia*, and *Tradescantia*.

Henry Compton, Bishop of London, Head of the Church for the American Colonies, was an early patron of plant exploration in North America. He grew over a thousand species of tropical plants and about half as many hardy trees and shrubs in his famous garden and greenhouse at Fulham Palace, and he sent John Banister (1654–1692) to America. Banister compiled a catalogue of American plants and was the first to send back to England the sweet bay (*Magnolia virginiana*), the swamp azalea (*Rhododendron viscosum*), and the Virginia bluebell (*Mertensia virginica*). He died young and tragically, during a trip to the lower Roanoke River in Virginia, when another man on the trip mistook him for a wild animal and shot him (Ewan & Ewan, 1970).

Indeed, it is surprising that as many botanists survived as did, so parlous were the times. From 1702 to 1783 the English, and frequently their American colonies, were engaged in Queen Anne's War, the War of Jenkins's Ear, King George's War, the French and Indian War, and, finally, the War for American Independence. Totally undaunted by these disturbances, the collectors went about their business with a dedication and fervor at which we can only marvel.

Mark Catesby (1682–1749), an English botanist, made two long trips to America and the Bahamas, and after twenty years of work, published, in 1747, *The Natural History of Carolina, Florida, and the Bahama Islands*. Peter Collinson wrote to Linnaeus, "Catesby's noble
One of Mark Catesby's notable plant introductions to England, the common catalpa (Catalpa bignonioides) is still considered in that country to be among the finest of summer-blooming trees. In the plate above, from Catesby's Natural History (vol. 1, pl. 49, 1754), the catalpa is a backdrop for "The Bastard Baltimore" (the orchard oriole, Icterus spurius); the accompanying description was the first published account of the plant.
work is finished.” Noble it is indeed, the first natural history of this country, magnificently illustrated in large part by Catesby, who taught himself engraving to accomplish it. He was as avid a collector as the other early plant explorers, sending his seeds back in gourds, and was responsible for introducing to Britain the American beauty berry (Callicarpa americana), the common catalpa (Catalpa bignonioides), sourwood (Oxydendrum arboreum), and the Virginia stewartia (Stewartia malachodendron).

Peter Collinson (1694–1768), a London Quaker merchant, was another moving force in the exchange of plants between America and Europe. He corresponded with Georg Stellar, a German plant collector in Russia, and with Pierre d'Incarville, a French botanist exploring in China, but is most famous for his long correspondence with John Custis, father-in-law of Martha Custis Washington, and his thirty-five year friendship, by letter, with John Bartram. He sent Custis double Dutch tulips, Guernsey lilies (Nerine sarniensis), carnations, and auriculas among many other plants. In return, Custis sent him such native shrubs as bayberries (Myrica pensylvanica), mountain laurel (Kalmia latifolia), and yaupon (Ilex vomitoria).

One of the many letters Collinson sent to Custis introduced “a downright plain countryman.” This was John Bartram (1699–1777), a Philadelphia Quaker and widely travelled farmer, who taught himself Latin and botany, and through Collinson’s efforts in his behalf, was made botanist to King George III in 1765. An even more impressive tribute came from Linnaeus, who said that Bartram was “the greatest natural botanist in the world”. Bartram harvested the first American rhubarb, and flowered the first horsechestnut (Aesculus hippocastanum) in his garden on the banks of the Schuylkill River, the first botanic garden in America, and one of the first to become commercial. He introduced more than two hundred plants to England during the years he and Collinson conducted their “settled trade and business”. Goat’s-rue (Tephrosia virginiana), wild monkshood (Aconitum uncinatum), the common shootingstar (Dodecatheon meadia), wild sweet william (Phlox maculata), and poison ivy (Toxicodendron radicans) were but a few of his offerings, the last mercifully a failure in England. On his last expedition, when over seventy years old, he discovered with his son William a stand of franklinia (Franklinia alatamaha) in Georgia. Fifteen years later William returned to the spot and gathered seeds. The Bartrams called the tree “Franklinia” after “the illustrious Dr. Benjamin Franklin.” It has not again been found in the wild since the early nineteenth century.

William Bartram (1739–1823) did not have the tremendous staying power of his father and drifted from job to job with no success. An excellent draughtsman, he finally was paid by Dr. John Fothergill to collect plants in Florida, and made a long journey through the southern states. The journey is described in his curiously illustrated book Travels through North and South Carolina, Georgia, East and
Mountain laurel (Kalmia latifolia) from The North American Sylva (vol. 2, pl. 68, 1818) of F. Andrew Michaux, who traveled with his father André through the southeastern United States. A widespread shrub of our Eastern forests, Kalmia latifolia is the most familiar member of a small genus of American shrubs named by Linnaeus in honor of one of his students, Peter Kalm, who explored eastern North America on behalf of the Swedish government in 1748.
West Florida, published in Philadelphia in 1791, fourteen years after William completed his travels. The book supplied imagery to Coleridge, Wordsworth, and Chateaubriand. To the Indians, Bartram was known as Puc Puggy, the Flower Hunter.

Other countries than England produced dedicated collectors. Pedr (Peter) Kalm (1715-1779) was Finnish. A pupil of Linnaeus, who maintained that “all Lapland could be rendered fertile by the introduction of appropriate American plants,” Kalm’s travels through America were as much a commercial as a botanical expedition. He visited Bartram in Philadelphia, admiring his encyclopedic knowledge, as did everyone who knew him. Kalm collected in Canada as well as the Delaware River region, returning to Sweden in 1751 with a harvest of new material, to the delight of Linnaeus, who rose from a sick bed to welcome him.

The French botanist André Michaux (1746-1803) visited England in 1779, bringing home many of the foreign plants in cultivation there. Marie Antoinette sent Michaux to Asia with Xavier Rousseau (cousin of the philosopher), and Michaux sent home from Aleppo his first collection, including Michauxia campanuloides, a flower greatly admired by the Victorians, but now not often seen in cultivation. Continuing on his own through Syria and Persia, Michaux brought back among other treasures, Rosa persica. In 1784, together with his fifteen year old son and the Scotsman John Fraser, Michaux explored and collected in Georgia and South Carolina. He also made many expeditions on his own, from Florida to Hudson’s Bay and as far west as the Mississippi. He started a nursery at Ten Mile Station, north of Charleston, and from seed brought by sailing ships trading with China, he introduced to America the maidenhair tree (Ginkgo biloba), the crape-myrtle (Lagerstroemia indica), the silktree (Albizia julibrissin), and many other important additions to our cultivated flora. He brought or sent back to France an immense collection of 60,000 living plants and ninety consignments of seeds.

These dedicated explorers and collectors were supported by a wide spectrum of patrons. Benjamin Franklin was a staunch friend and supporter of Bartram and Collinson. In Collinson’s account book one finds the Dukes of Norfolk, Richmond, Bedford, and Argyle, and the Lords Petre, Bute, Leicester, and Marlborough; nurserymen, lady gardeners, and Virginia plantation owners also contributed for plant collecting. Even the Prince of Wales twice begged and paid for boxes of plants. The burgeoning interest in plants transcended the still rigid class system, and a man with a new or curious plant was welcome at any door.

Having begun with an impossible picture, we can end our brief history by describing two actual eighteenth century gardens. George Washington and Thomas Jefferson were eager collectors and cultivators. Mt. Vernon and Monticello, both brilliantly laid out, both replete with fine trees, shrubs, and flowers from both sides of the Atlantic,
represent the epitome of what could be done with what had been discovered in the plant world.

Mt. Vernon, designed with meticulous care by Washington, was so ambitious, so demanding with its large variety of material, that it is no wonder his papers contain a great number of questions and directions concerning every sort of shrub and tree. Throughout the French and Indian War, the Revolution, and his terms as President, he wrote a steady stream of detailed instructions to a succession of overseers, ordered plants from various nurseries, Bartram's among them, and asked for advice and stock from gardening friends. His plantation was the delight of visitors, and his loving care and incessant planning is reflected even today in the excellent restoration of his property. It was from Mt. Vernon in 1797 that he wrote a Mr. J. Anderson: "I am once more seated under my own vine and fig tree . . . and hope to spend the remainder of my days . . . in peaceful retirement; making political pursuits yield to the more rational amusement of cultivating the earth."

Thomas Jefferson, among his myriad other talents, was an accomplished naturalist and botanist. He began planting at Monticello in 1766, keeping a garden book in which he entered every plant he used, noting its progress, and, in the case of vegetables — every one of which he grew, with all its varieties — when it came up, and when it was eaten. While at the French Court from 1784 to 1789, he sent home hundreds of seeds and roots. In England he made a study of the great gardens and from his notes incorporated many of their features at Monticello. His plantings were informal and eclectic, and included figs, acacias, pomegranates, almonds, olives, and nectarines, as well as the more familiar nut and fruit trees: walnuts, peaches, filberts, cherries, apples, plums, and pears. Monticello also is now restored to much of its former splendor.

Our difficult beginnings culminate here triumphantly. We forever should be grateful for those men who established such strong roots across the Atlantic and whose roots, today, still are spreading.

References

The franklinia or Franklin tree (Franklinia alatamaha) taken from The North American Sylva (vol. 2, pl. 59, 1818) of F. Andrew Michaux. After its original description, the franklinia was often considered to be a species of Gordonia, along with the loblolly bay (G. lasianthus) of our southern states. However, the unique structure of its capsule has prompted most modern taxonomists to classify it in a genus by itself.

"Great soft-shelled tortoise" from William Bartram's Travels through North and South Carolina, Georgia, East and West Florida (1791).
"I am a plantsman!" With these four words, more apt than any of us could have imagined initially, Michael Albert Dirr bounded into Jamaica Plain in July, 1978, and into the hearts of all who would be associated with him during his twelve month appointment as a Mercer Fellow. The Arnold Arboretum will never be the same.

Mike squeezed more into his year than many of us manage in a lifetime. He taught classes, he lectured, he patiently answered plant questions by phone and by letter, he led tours, he captained our lunchtime football team, he wrote articles. And that was only a small part of his typical day. What he liked most to do was look at plants. What he liked secondmost to do was talk about plants — to any and all who would listen. Students in his classes came great distances and in inclement weather to walk the Arboretum grounds with him. His colleagues at the Arboretum and elsewhere were like elixir to him. Nothing stimulated him more than talking plants. Like all great teachers, though, he never pretended to know it all. "I have so much to learn!" he'd moan.

He was generous in his praise of others and in acknowledging their assistance. He was one of the best press agents the Arnold Arboretum ever had. He spoke constantly of it at meetings he attended and on his travels to nurseries and universities. Superlatives were a large part of his vocabulary; "outstanding" and "fantastic" were two of his favorites, and he used them liberally when describing the Arboretum. "We're so fortunate," he'd say. "Imagine, being among the few se-
lected to work at 'America's Greatest Garden'!" Indeed, those of us who had been here awhile and had tended perhaps to forget, suddenly saw the Arboretum with fresh new vision. Like Mike, we began to appreciate the wealth we had all around us.

Mike Dirr was beloved by everyone. He was always exactly what he appeared to be: a warm and generous man, a kind man, a very giving man. He loved people, and people responded to his attention and to his enormous sensitivity with an unparalled enthusiasm of their own. Mike left in his wake a New England landscape littered with friends. Hyperbole? Yes. But Mike Dirr seems bigger than life sometimes.

We miss Mike Dirr and his family. But as sure as the buds swell and burst in the early spring, and new leaves unfold, and robins fly north again, we know that Mike will return. Boundless enthusiasm, an abiding love of plants and people (with plants, perhaps, holding the slightest edge!) and a heart big enough to enfold the world: this is how we tend to remember Mike Dirr.

MARGO WITTLAND REYNOLDS

Right: From Crispijn vande Pas the Younger, Hortus floridus (1614). Back cover: Photograph by Mary Rosenfeld.
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