Two centuries of *Magnolia cordata* Michaux at Longwood

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Shortly before the turn of the 18th century twin brothers, Joshua (1766–1851) and Samuel (1766–1838) Peirce, Quaker farmers living near the small village of Kennett Square in Chester County, Pennsylvania, 30 miles west of Philadelphia, began planting an arboretum, which later became a nucleus of today's world-renowned Longwood Gardens. Many trees still standing at the site of the previous arboretum provide silent testimony to this brave undertaking, then considered as "the practical vagaries of an eccentric mind" (Darlington, 1846 *in* Spraker, 1975). Among them is *Magnolia cordata* Michaux (Figure 1), a rare yellow-flowered form of magnolia from Georgia and the Carolinas, which also renders a link to the age of great botanical discoveries in America.

The last quarter of the 18th century was a time of very active exploration of American flora by European botanists and plant collectors. Among them was the Frenchman André Michaux (1746–1802), who in October of 1785 arrived in New York along with his 16-year-old son François André (1769–1855). In June of the following year, in preparation for exploration of the southern states, Michaux traveled to Philadelphia to meet a distinguished American naturalist, William Bartram (1739–1823). William was a son of John Bartram (1699–1777), who in Kingsessing near Philadelphia established the first botanical garden in America. William Bartram had traveled extensively in Georgia, the Carolinas and Florida, and Michaux undoubtedly had long discussions with him about plants seen during those journeys. Later that year Michaux arrived in Charleston, South Carolina, and in the spring of 1787 he undertook his first trip to explore the

Savannah River as far as what was then called the "Indian Country." On this trip Michaux saw for the first time *M. acuminata* and also another magnolia which he called "*M. hastata*" but today is known as *M. fraseri*. The latter species was discovered in 1776 by William Bartram, who named it *M. auriculata* (Bartram, 1791).

In the late fall of 1788, Michaux was on yet another collecting trip in the "Indian Country." On December 8, two miles before arriving at the source of the Keowee river, he "recognized the *Magnolia montana*, which has been named *Magnolia cordata* or *auriculata* by Bartram" (*in* Savage and Savage, 1986). This passage in Michaux's diary is a mystery, because Bartram's "*M. auriculata*" is *M. fraseri*, and Michaux already collected the seeds of this magnolia, which he called "*M. hastata*," a year earlier. Apparently, Michaux misunderstood Bartram's descriptions of "*M. auriculata*." Intriguing also is the fact that Michaux had no difficulty in recognizing this tree in December, when the only winter characteristics distinguishing *M. cordata* from its closest relative, *M. acuminata*, are pubescent twigs. Sargent (1886) speculated that Michaux "must have become familiar with it previously, and probably in this very locality." Two days later Michaux collected seeds of *M. cordata* and on December 12 recorded in his diary gathering "a great deal of *Magnolia cordata* in better condition than those of the previous day" (*in* Savage and Savage, 1986). Michaux returned to Charleston on December 25 and without much delay sent two large shipments to France, including 10 plants of *M. cordata*, which indicates that he collected not only seeds but also young saplings. His first attempt to introduce *M. cordata* to France may have been unsuccessful because stormy weather caused the cargo to be thoroughly innundated with seawater. The fate of plants in this shipment may never be known, but many of the subsequent shipments sent to France also included *M. cordata*. This was not Michaux's only encounter with *M. cordata*, for he recorded in the diary finding it again in June of 1789, some 18 miles south of Charlotte, North Carolina, and also later that year between Morganton and Turkey Cove, North Carolina.

The tree at Longwood Gardens was first mentioned in 1853 by Thomas Meehan in his *American handbook of ornamental trees* as "a very fine" specimen. In the 1865 edition of François André Michaux's *North American Sylva,* the description of *M. cordata* is amended with a note that "there is a specimen in Mr. Pierce's [sic] arboretum, Chester county, Pennsylvania." Professor Charles Sargent of Arnold Arboretum visited Longwood and proclaimed this specimen of *M. cordata* "the largest he had ever seen" (Seibert, 1968).

The circumference of this tree recorded for the first time by Meehan in 1853 was 4 feet. A number of measurements were taken since 1922 (Seibert, 1968; Swarley *et al.*, 1968; Roberts, 1971; Greer, 1980) and presently the tree measures 12'3". Assuming a similar growth rate before and after 1853, it can be estimated that the tree was planted shortly before 1800.

Native trees in Peirce's arboretum were collected largely from the wild. Joshua Peirce acquired many of them on his own trips. *M. cordata,* however, could not be one of them, because he did not travel further south than Maryland. Even though the Peirce brothers left no written records of when and from whom they received Michaux's magnolia, or any other tree for that matter, there is ample circumstantial evidence to speculate on the origin of this specimen. Some of the trees in the arboretum are believed to have come from either Bartram's garden in Kingsessing or from the garden of Humphry Marshall (1722–1801) (Spraker, 1975). Marshall, a fellow farmer and plant collector himself, was a cousin of John Bartram and an uncle to the Peirce twins' mother. He authored *Arbustum Americanum* (1785), a landmark in American botany, which, as the younger Michaux wrote in the introduction to his father's work, "presented the trees and shrubs that grow in the northern region of America" (Michaux, 1803). In 1773, Marshall planted a nursery and botanic garden at what is now the village of Marshallton near West Chester, less than 5 miles from Peirce's farm (Hedrick, 1988). He is generally credited with inspiring the Peirce brothers to plant an arboretum and offering them cuttings and seedlings from rare native and exotic plants.

Marshall was engaged in a lively plant exchange with

William Hamilton (1745–1813). Hamilton, a wealthy Philadelphian and a keen plant collector, was a proprietor of the famous gardens of the Woodlands. Glimpses of the relationship between Marshall and Hamilton are reflected in the many letters which traveled between the Woodlands and Marshallton. In November, 1790, Hamilton, trying to convince Marshall to visit the Woodlands, wrote: "If I can tempt you no other way, I promise to show you many plants that you have never yet seen, some of them curious" (Darlington, 1849). That magnolias were also part of the vigorous plant trading between these two gentlemen is evident from a letter Hamilton sent to Marshall in May, 1799: "If convenient to let me have a plant or two of ... *Magnolia acuminata*, you will do me a great favour" (Darlington, 1849).

Hamilton and Marshall shared not only plants. Frederick Pursh (1774–1820), a German-born author of *Flora Americana Septentrionalis* (1814), worked in Marshall's arboretum before he became a gardener at Woodlands after Marshall's death in 1801. While working in the Woodlands, Pursh commented on Michaux's recently published *Flora Boreali-Americana*: " I was ... in possession of most of his plants" (*in* Faris, 1932). Another testimony on the richness of the botanical collections at the Woodlands in those days, and Hamilton's eagerness to acquire new plants, came from Mannaseh Cutler who in 1803 wrote: "There was not a rare plant ... of which he had any account, which he had not secured" (*in* Faris, 1932).

Both André and François André Michaux were well acquainted with Hamilton and Bartram, whom they visited on numerous occasions during their years in America. In an 1810 letter to William Bartram, François André Michaux wrote: "The marks of friendship that you have invariably bestowed on my father and me, will be constantly present to my memory" (Darlington, 1849). Undoubtedly, Michaux shared with Bartram and Hamilton botanical treasures found in the hills of South Carolina. Among these most likely was also *M. cordata*. Michaux's visit to the Woodlands and Bartram's garden in July, 1789, soon after discovering *M. cordata*, provided the first opportunity for introducing this new species to his dear friends. Baxter (1931) listed *M. cordata* among plants known

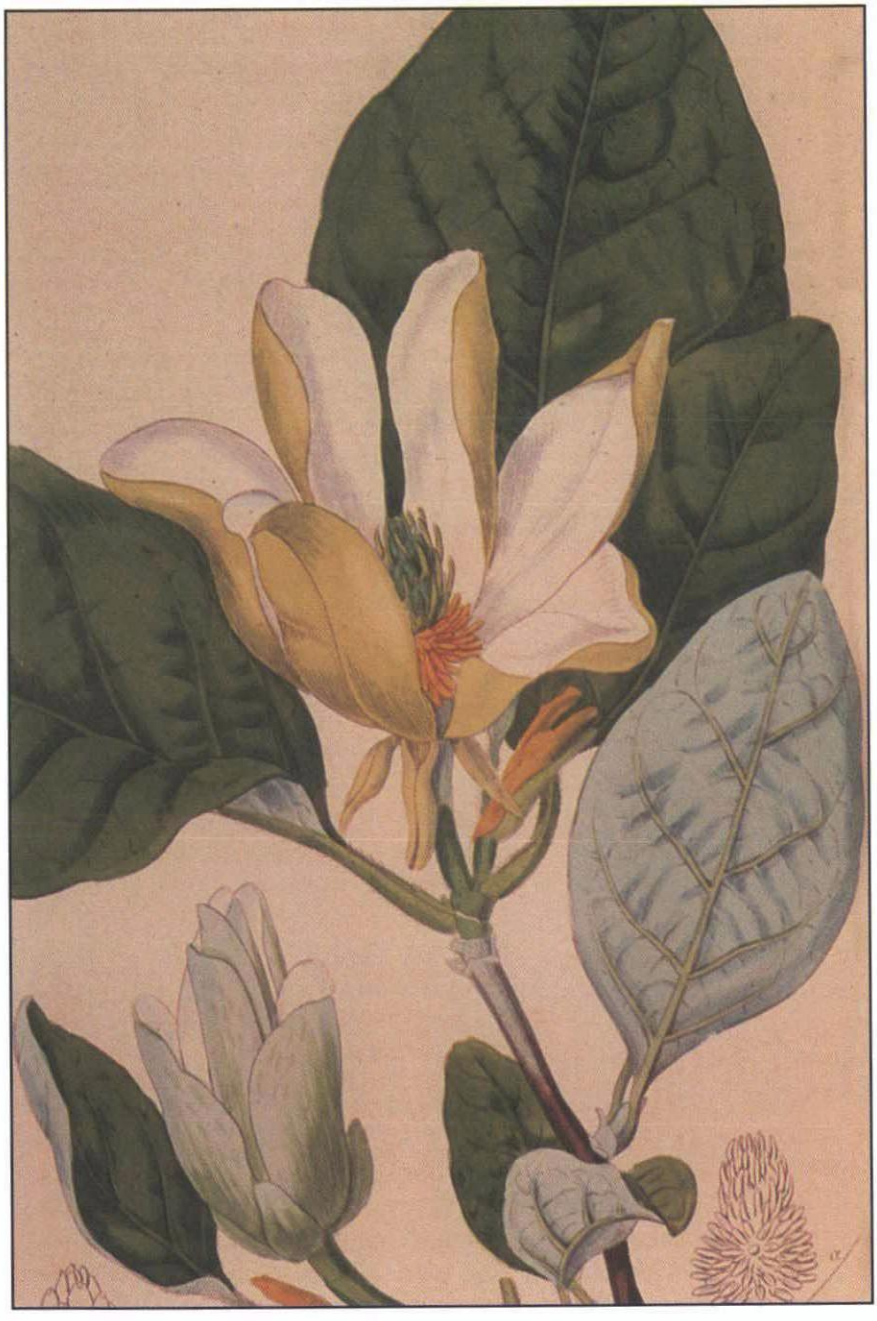

Figure 1. Magnolia cordata *Michaux illustrated in* The Botanical Register, t. 325, *London, 1818.*

to have been in the Bartram's garden in its early days. Thomas Meehan writing in 1853 about *M. cordata* commented: "There are very fine specimens in Hamilton's old garden at Woodlands, and also, in Mr. Peirce's arboretum." The Peirce brothers began planting their arboretum in 1798, two years after Michaux departed from America, but Michaux's magnolia could have reached Peirce's arboretum, possibly with the help of Marshall, from either Hamilton's or Bartram's garden. That a number of these magnolias were distributed around the turn of the century can be ascertained from a 1818 description of yet another specimen in the garden of Mr. Landreth of Philadelphia in Nuttall's *The genera of North American plants*. Two centuries ago there was apparently much interest in Michaux's yellow-flowered magnolia in Philadelphia horticultural circles, and Longwood's tree may be the only surviving witness.

The possibility of Longwood's magnolia coming from either Bartram or Hamilton is additionally supported by another tree growing next to it, a 200-year-old *Ginkgo biloba*, believed to be one of the original trees imported to America (Slosson, 1951). It is probably not a coincidence that in Peirce's arboretum *M. cordata* was planted only 8 feet from *Ginkgo biloba* (Figure 2). Both species were introduced into cultivation in America and distributed at about the same time. Therefore, it is likely that Longwood's specimens are of similar age and came from the same source. One of the key players in the introduction of *M. cordata* into cultivation, William Hamilton, is also credited with introducing *Ginkgo* into the United States. In 1784–1786 he visited England from where he sent many new plants to Philadelphia, including the first *Ginkgo* to reach America. Two trees were planted at Hamilton's Woodlands (Cheston, 1938; Meyer, 1977), but "others of the same age are in Bartram Gardens, Philadelphia and at Pierce's [sic] Park, near West Chester, Pennsylvania" (Maury, 1909). Meehan in 1853 commented that Peirce's *Ginkgo* was "little if any, inferior to the Bartram specimen." The year after Hamilton sent his plants to the Woodlands, André Michaux arrived in America carrying with him *Ginkgo* "as a gesture of good will on behalf of the government of France" (Spongberg, 1990), which he

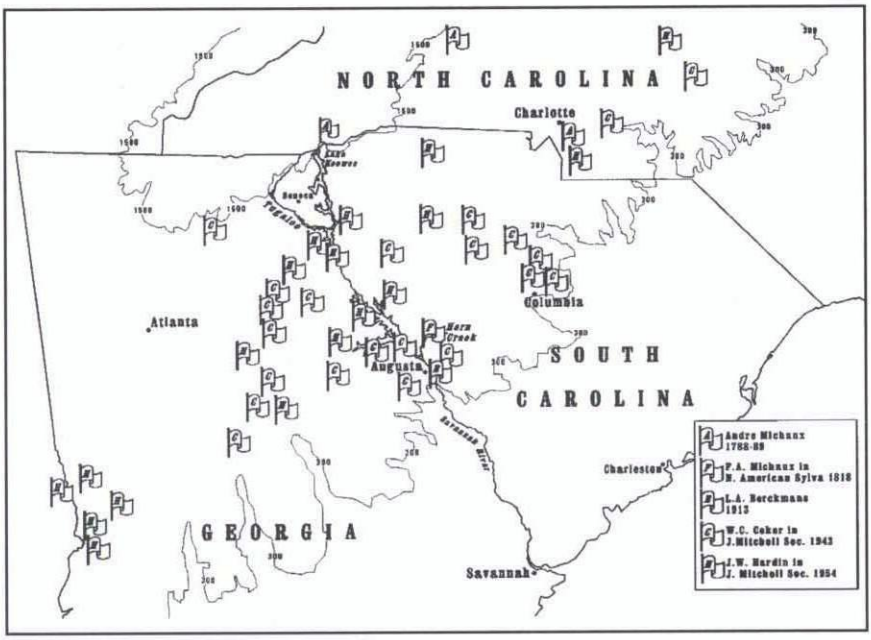

Figure 3. *Distribution map of* Magnolia cordata.
Locations in Pickens, Tuscaloosa, Shelby, and Baldwin Counties in Alabama, and in Walton County in Florida (Hardin, 1954) not shown.

rediscovered in 1913 by Berckmans near Augusta, Georgia. This population consisted of shrubs with the largest of them being only 7 or 8 feet tall (Sargent, 1914).

Trees of *M. cordata* discovered by Michaux father and son were, however, much taller. François André Michaux (1819) described this magnolia as 40–50 feet high in its natural habitat. Meehan in the *American handbook of ornamental trees* (1853) writes about *M. cordata* that "in its native places it grows about 50'." A large tree was known at a farm outside Lexington, Kentucky, and was believed to be the same clone which was sent to France by Michaux (Treseder, 1978). Later discoveries in the wild also included large trees. A tree 50 feet high was found growing in Clark County, Georgia (Coker, 1943). Among a number of *M. cordata* trees discovered in Newberry County, South Carolina, one was a very large tree, 85 feet high, "unfortunately for the comfort of the taxonomist" (Coker, 1943). Ashe (1927) reported finding trees up to 70' tall

in Choctaw County, Alabama.

It is evident from these reports that low height is not a reliable characteristic distinguishing *M. cordata*. Its size may be associated with elevation or latitude where wild populations occur. The Longwood specimen has a noticable graft line at the base of the tree. There is a possibility that grafted trees owe their greater size to a stronger stock, although Sargent (1914) was skeptical whether this could apply to *M. cordata*.

There is no consensus on what to call Michaux's magnolia. Its botanical status and therefore its scientific name have changed several times since the tree was discovered. Both Michaux father and son considered it to be a separate species. André Michaux named it *M. cordata* (1803) because of its supposedly "foliis cordatis" (cordate leaves). François André illustrated its cordate-type leaf in *North American Sylva* (1819). Nevertheless, the specific epithet is considered a misnomer (Coker, 1943) because this magnolia only rarely has cordate leaves.

Other early 19th-century botanists, including Nuttall (1818) and Elliott (1824), followed Michaux's treatment of *M. cordata* as a distinct species. In 1839 Spach recognized a close affinity of Michaux's magnolia to *M. acuminata* and named the plant variety *subcordatum* of *Tulipastrum americanum,* his name for *M. acuminata*. Loudon (1844) also suggested that *M. cordata* might be a variety of *M. acuminata,* although he did not propose a varietal name. This was done again by Seringe in 1849, when he published *M. acuminata* var. *cordata,* the name which had been widely used until the turn of the century (Sargent, 1890, 1905). Rediscovery of the natural populations by Berckmans in 1913 revived briefly the concept of *M. cordata* as a distinct species (Bean, 1914; Sargent 1914, 1922; Small, 1933). Later studies of Coker (1943) and Hardin (1954) reduced it back to the varietal status. Coker (1943) reached a conclusion that *M. cordata* is only "a rather vaguely defined, marginal extension of the southern yellow-flowered variety of *M. acuminata*." In 1962, Dandy resurrected Spach's varietal name as *M. acuminata* var. *subcordata* and this name has since become firmly established in the horticultural literature

undoubtedly shared with his Philadelphian friends. It appears therefore that Bartram's and Peirce's trees could have come from either Hamilton's or Michaux's introduction.

Another compelling argument for Longwood's magnolia originating from the first introduction by André Michaux is that, with the exception of plants sent to England in 1801, there were no new introductions for well over a hundred years. Botanists lost sight of this tree in the wild until Louis A. Berckmans of Augusta, Georgia, rediscovered it in 1913 in two places in Richmond County, some 18 miles south of Augusta, near the Savannah River (Coker, 1943; Hadrin, 1954). Soon more discoveries followed, and today this magnolia is known to occur in the piedmont region from Moore and Anson counties in North Carolina to Pickens County in Alabama (Hardin, 1954) at the altitude of 300 to 1500 feet (Figure 3). Isolated locations on coastal plains have been found in Baldwin County, Alabama, and Walton County, Florida (Hardin, 1954). The Savannah River where Michaux concentrated so much of his botanizing efforts cuts through the center of that range.

According to the *National Register of Big Trees* (1996), Longwood's tree is a national champion of this variety. Its height recorded by Swartley in 1968 was 102 feet but currently it measures 93 feet. The next tallest tree, 89 feet high, has been recorded in Virginia Beach, Virginia. The sheer size of Longwood's tree often causes disbelief in those who see it. A frequently perpetuated myth about *M. cordata* suggests that it is either a small tree or a shrub. This has inspired some doubt as to whether Longwood's tree is indeed *M. cordata*, when, as one author put it, "every piece of literature and eye to tree observation says otherwise"(Dirr, 1990).

In fact not "every piece of literature" says that. The early descriptions of *M. cordata* as a small tree came from England where the tree growing in the nursery of Messrs. Loddiges was described as only 15 feet high when over 50 years old (Loudon, 1854). The tallest tree known in England at that time was a mere 27 feet high (Loudon, 1854). Cultivated specimens deriving from early introductions in England were considered as "slow growing, stunted trees no more than 30' high" (Bean, 1981). Even smaller plants were found when *M. cordata* was

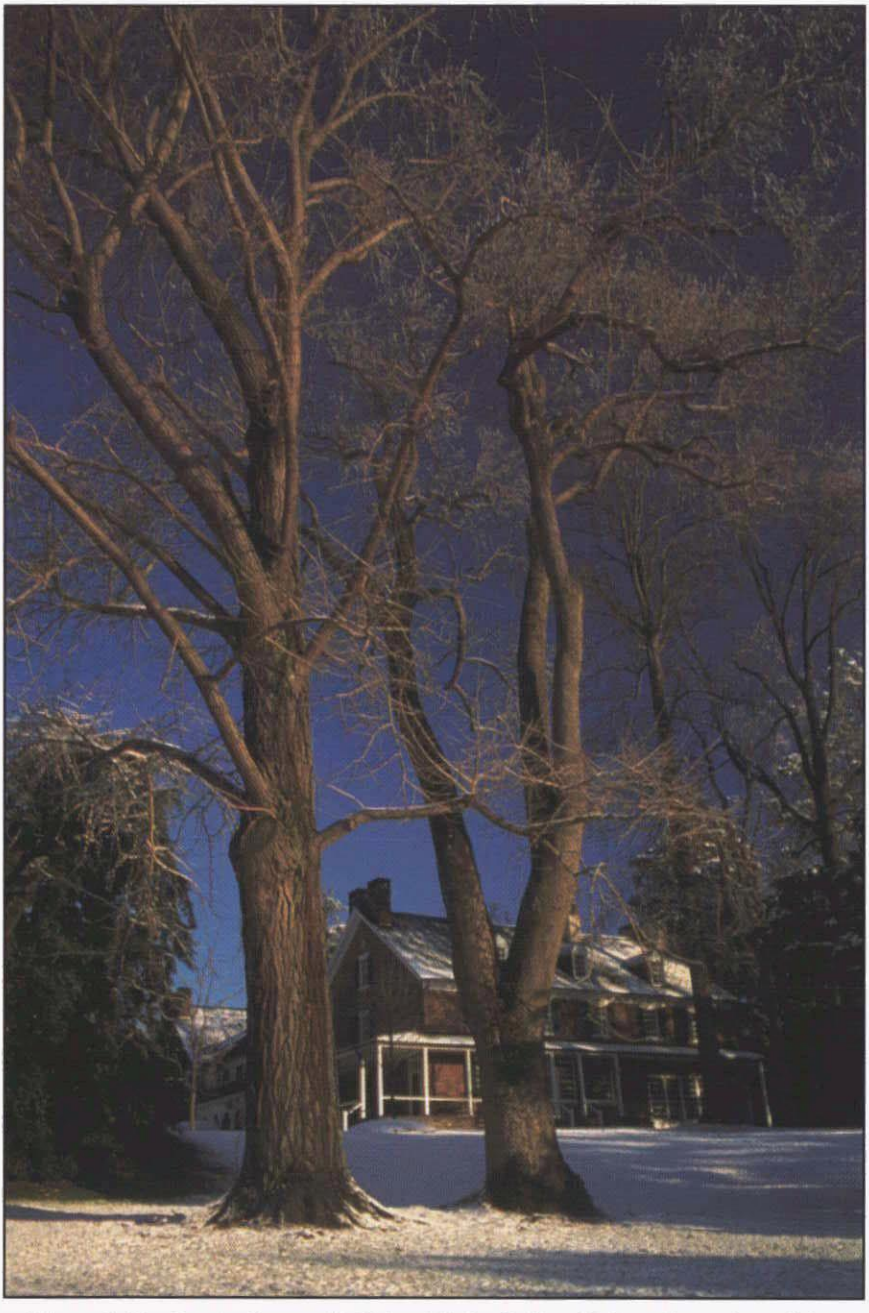

Figure 2. *Two hundred-year-old* Ginkgo biloba (left) *and* Magnolia cordata (right) *in front of the Peirce-du Pont House at Longwood Gardens.*

(Spongberg, 1976; Dirr, 1990; Callaway, 1994). Hardin, however, based on his later research (1972, 1989), abandoned the earlier views and denied Michaux's *cordata* its varietal recognition, stating that variation in *M. acuminata* lacked any consistent pattern or geographic correlation. This view was shared by other botanists (Kartesz and Kartesz, 1980) and was recently accepted by Meyer in *Flora of North America* (1997). This may lead to the disappearance of Michaux's magnolia from the pages of future botanical books. Gardeners, however, will continue to cherish this treasure tree Michaux discovered at the source of the Keowee River, and the Longwood specimen will be admired for many years to come as it has been for the past two hundred. The tree has recently been successfuly propagated and was registered with the Magnolia Society as cultivar 'Peirce's Park.' In this way the fascinating history of Michaux's yellow-flowered magnolia will be preserved regardless of its botanical status.

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Michelia doltsopa *(above) and* Michelia x alba *(below) photographed at the Huntington Library and Botanical Garden, Pasadena, California.*

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