Contents

1 A Tentative Key to the Cultivated Magnolias
   STEPHEN A. SPONGBERG

12 Materials for Chair Seat Weaving
   RALPH E. WHEELER

22 The Shadbushes
   RICHARD E. WEAVER, JR.

32 Dykes Medal Iris at the Case Estates
   GEORGE H. PRIDE

35 Arnoldia Reviews

ARNOLDIA is a publication of the Arnold Arboretum
of Harvard University, Jamaica Plain, Mass. 02130

Published six times a year: in January, March, May, July, September, and November
Subscriptions: $5.00 per year. Single copies, $1.00
A Tentative Key to the Cultivated Magnolias

The genus *Magnolia* was named by Linnaeus to commemorate Pierre Magnol, 1638–1715, a professor of botany and medicine and an early director of the botanical garden at Montpellier. Comprised of about 75 or 80 species, the genus occurs naturally in two widely separated areas; about 50 species are native in eastern Asia from Japan to the Himalayan region and southward to Java, while in North and Central America 25 or 30 additional species are known. Most of the species are apt and sought-after ornamentals, noted for their white, pinkish, purplish, or greenish-yellow flowers that are almost unrivaled in both size and beauty. Moreover, the ease with which some of the species hybridize has added to the popularity of the genus with plant breeders, and some of the finest ornamentals are the result of hybridizations.

The leaves of *Magnolia* also are noteworthy, since some species have leaves that are as large as those of any of our native or cultivated plants. Some of the deciduous species flower before the leaves expand in the spring, and the pastel-colored blossoms stand out against the delicate tracery of the branches, while in other deciduous and evergreen species, the flowers are produced against the luxuriant backdrop of the foliage. In late summer and fall, the interesting fruit aggregates divulge the red or orangish seeds and add to the ornamental value of the plants during that season. The densely pubescent flower buds of some deciduous species, moreover, make the dormant plants attractive during winter and anticipate, long in advance, the spring to follow.

The tentative key presented here is a result of an examination of the taxonomy of *Magnolia* for a projected manual of cultivated trees and shrubs. Since *Magnolia* is a genus that is an established favorite with gardeners and horticulturists, as well as botanists, it is hoped that publication of this key in its present preliminary form will allow interested individuals to test its utility with living specimens. I shall greatly appreciate com-
ments on the workability of the key as well as mistakes and oversights that become evident in it, so that they can be corrected for a final version.

Although there are several keys for the identification of the species of *Magnolia* (and comparisons of these with the present key will show my indebtedness to their authors), most are restrictive since they treat species of a particular region or botanical group. Dandy’s key to the species of the genus, published in the *Journal of the Royal Horticultural Society*, is not readily available to the American public. The present key addresses itself to species cultivated in North America, north of tropical and subtropical areas. With the exception of Rehder’s key in the second edition of his *Manual of Cultivated Trees and Shrubs*, there is no single reference for the identification of the taxa and hybrids of *Magnolia* either commonly or uncommonly encountered in temperate regions of North America. Most determinations of infrequently cultivated species, moreover, require consultation of monographs and numerous references scattered in the older botanical and horticultural literature.

All of the names of *Magnolia* included in Rehder’s *Manual* have not been keyed or accounted for here largely due to some unresolved problems requiring further research and taxonomic judgement. Yet, the number of keyed taxa has been doubled from 19 in Rehder’s *Manual* to 38 in the present key. Of these 38 taxa and hybrids, three were not treated by Rehder, while the ranks of some other taxa have been changed in accordance with the results of recent research into the taxonomy of the species by several investigators. The treatment prepared by Rehder for L. H. Bailey’s *The Standard Cyclopaedia of Horticulture* (1914), which predates his treatment in the second edition of his *Manual*, keyed the 23 taxa then known in cultivation in a larger geographic area, but the taxonomy has since been modified and the nomenclature largely superseded.

**Figure 1.** Magnolia. *a–m*, subgenus Magnolia. *a–i*, M. virginiana: *a*, flowering branchlet, $\times 1/2$; *b*, flower with tepals removed to show androecium (many stamens removed) and gynoecium (carpels), $\times 2$; *c*, 3 stamens from adaxial side, showing lines of introrse dehiscence, $\times 3$; *d*, cross sections through anthers to show pollen sacs and vascular bundles, $\times 6$; *e*, longitudinal section of gynoecium showing 5 carpels, each with 2 ovules, $\times 3$; *f*, nearly mature fruit aggregate with longitudinal stylar scars on the carpels, $\times 1/2$; *g*, mature fruit aggregate with pendulous seeds, $\times 1/2$; *h*, seed in longitudinal section showing seed coats, endosperm (dotted), and minute embryo, $\times 2$; *i*, seed with fleshy red outer coat removed, $\times 2$. *j–l*, M. grandiflora: *j*, bud, with stipular bud scale about to fall, $\times 1/2$; *k*, flower with tepals removed to show androecium (stamens) and gynoecium (carpels), half of the stamens removed, $\times 1$; *l*, stamens from adaxial side, showing lines of introrse dehiscence, $\times 2$. *m*, M. tripetala: stamen from adaxial side, $\times 3$. *n–q*, subgenus Yulania, M. acuminata var. subcordata: *n*, flowering branchlet, $\times 1/2$; *o*, opening flower bud showing reduced outer tepals, $\times 1/2$; *p*, stamen from adaxial side, showing lateral dehiscence, $\times 4$; *q*, cross section through anther, showing lateral dehiscence and 3 vascular bundles, $\times 8$. 
Casual inspection of the key will indicate that nomenclatural changes and taxonomic judgements have affected the names by which several taxa are usually referred to in the literature and horticultural trade. In these few instances, pertinent synonyms and references to the literature are indicated in footnotes.

One of the problems encountered in preparing the key was deciding which species, taxa of a rank lower than species, and hybrids should be included. Documented specimens in the herbarium of the Arnold Arboretum have been the basis on which most taxa have been included. In other instances, published records of the occurrence of taxa in cultivation within the range of Rehder's Manual (including the plant inventories of several arboreta and botanical gardens produced in computerized form by the Plant Records Center) have been accepted as documentation. In general, a taxon has been included if there is good evidence of its occurrence or possible occurrence within our area.

Another problem of considerable concern has been the lack of treatment accorded cultivars. The purpose here is to provide a key for the identification of species and botanical varieties, some of the more distinctive hybrids, and in one instance a botanical form. Because of the difficulties surrounding their circumscription, cultivars have not been accounted for here. A bibliography has been appended to the key to serve as a guide to some of the literature where information concerning cultivars can be found. Unfortunately, in my opinion, altogether too many plants in the trade are listed and sold only under a cultivar name without any reference to the relationship of the plant to a botanically accepted species or hybrid group. This procedure is acceptable under the rules of the International Code of Nomenclature of Cultivated Plants — 1969, but the cultivar name alone (and they are in excess of one hundred in Magnolia) gives no indication of derivation or relationship. Hopefully, this key will enable the association of some cultivars with the taxon or hybrid group to which they belong.

Unfortunately, it has been impossible to construct a key using only vegetative, floral or fruiting characteristics; as a result, characters from the flowers and fruit aggregates, as well as from the vegetative parts, may be required for an identification. It is conceivable that an entire growing season may be necessary for the accurate and correct identification of a particular plant, and it is suggested that careful notes and a series of pressed herbarium specimens be made throughout the season to preserve flower and fruit characters as well as those of the leaves. Concomitantly, the different stages available should be used in conjunction with the key until a determination is made. Some of the characteristics used in the key are illustrated in Figure 1, and in these instances the appropriate drawings illustrating the character are referred to in the key.
A TENTATIVE KEY TO CULTIVATED MAGNOLIAS

1. Anthers dehiscing introrsely (Fig. 1, b, c, d, l, & m); flowers neither appearing before the foliage nor with an outer whorl of calyx-like tepals; leaves persistent or deciduous.

2. Stipules adnate to the petioles, leaving scars on the upper surface of the petioles; leaves deciduous or persistent.

3. Leaves persistent, flower buds enclosed in one or more stipular bud scales (Fig. 1, j), the scales leaving as many annular scars on the pedicel.

4. One or more stipular bud scales enclosing the flower bud, leaving one or several annular scars on the pedicel; stipules large, extending almost the entire length of the petiole to the base of the blade.

   M. Delavayi.

4. One stipular bud scale (Fig. 1, j) enclosing the flower bud, leaving one annular scar on the pedicel, stipules very small, leaving obsolete scars on the petioles.

   M. grandiflora × virginiana.

3. Leaves deciduous (or sometimes persistent in M. virginiana); flower buds enclosed by one stipular bud scale (Fig. 1, j), leaving a single annular scar on the pedicel.

5. Leaves crowded into false whorls at the ends of branches, the leaves large or very large, 20–100 cm. long.

6. Leaves auriculate or cordate at base.

7. Leaf blades, stipules, buds, and follicles finely pubescent.

   M. macrophylla (incl. M. Ashei).

7. Leaf blades, stipules, buds, and follicles glabrous.

8. Stamens more than 8 mm. long; tepals more than 8 cm. long; fruit aggregate more than 6 cm. long.

   M. Fraseri.

8. Stamens less than 8 mm. long, tepals less than 8 cm. long; fruit aggregate less than 6 cm. long.

   M. pyramidata.

6. Leaves cuneate to rounded or rarely subcordate at base.

9. Fruit aggregates to 10 cm. long; flowers with offensive odor.

   Magnolia tripetala.

9. Fruit aggregates over 10 cm. long; flowers fragrant.

10. Ripe carpels with short beaks, usually less than 5 mm. long; indumentum, if present, not reddish-brown.

11. Leaves mostly obovate; young branches and leaf petioles purplish.

   M. hypoleuca.

11. Leaves mostly elliptic-obovate, sometimes bilobed at the apex; young branches and petioles yellowish-green.

   M. officinalis.

10. Ripe carpels with long beaks, up to 8 mm. long; buds and leaves with reddish-brown pubescence.

   M. rostrata.

5. Leaves not crowded into false whorls at the ends of branches, the leaves generally 10–20 cm. long.

12. Leaves deciduous or sometimes persistent, glaucous on the under surface; anther connectives with short, acute appendages (Fig. 1, c).
13. Tepals up to 10 cm. long; leaf blades up to 20 cm. long, broadly elliptic to obovate.  
*M. × Thompsoniana.*

13. Tepals up to 5 cm. long; leaf blades up to 15 cm. long, ovate to narrowly elliptic or lanceolate.  
*M. virginiana.*

12. Leaves deciduous, the under surfaces pale green or somewhat glaucous; anther connectives blunt or retuse at the apex (Fig. 1, p).  
14. Flowers pendent at anthesis, the fruit aggregates pendent; leaves with gray or silver-gray pubescence.  
15. Leaves elliptic with an acute apex; pubescence on under surface of leaves gray, branchlets dark brown.  
*M. Wilsonii.*

15. Leaves obovate with obtuse apices; pubescence on under surfaces of leaves silvery-gray; branchlets light tan.  
*M. sinensis.*

14. Flowers nodding or horizontal at anthesis (not fully pendent); leaves almost glabrous below and/or with the hairs with reddish-brown pigment at the base or conspicuously rufous.  
16. Leaves obovate to broad elliptic; under surfaces glabrescent, without conspicuous rufous pubescence along the midvein and major lateral veins; branches becoming light brown.  
17. Pedicels stout, ca. 5 mm. in diameter, leaves with 10–15 pairs of veins; tepals up to 6 cm. long, stamens ca. 2 cm. long.  
*M. × Watsonii.*

17. Pedicels slender, ca. 2 mm. in diameter; leaves with 6–10 pairs of veins; tepals up to 5 cm. long, stamens less than 1 cm. long.  
*M. Sieboldii.*

16. Leaves obovate to elliptic, the under surfaces pubescent with conspicuous rufous indumentum along the midvein and major lateral veins; branches becoming chocolate brown.  
18. Stipules free from the petioles, not leaving scars on the upper surfaces of the petioles; leaves persistent.  
*M. globosa.*

18. Gynoecium stalked (stipitate), the stamens or stamen scars separated from the gynoecium by a short gap on the floral axis.  
*M. nitida.*

18. Gynoecium sessile, the stamens or stamen scars occurring immediately under the gynoecium (Fig. 1, b, k).  
*M. grandiflora.*

19. Carpels densely pubescent, the hairs extending onto the adaxial surfaces of the styles (Fig. 1, k); tepals 8–12 cm. long; fruit aggregate usually greater than 4 cm. long.  
*M. grandiflora × virginiana.*

19. Carpels sparingly pubescent, the styles glabrous; tepals 7–9 cm. long; fruit aggregate usually less than 4 cm. long  
1. Anthers dehiscent laterally or sublaterally (Fig. 1, p, q); flowers appearing before the foliage and/or with a much reduced calyx-like outer whorl of tepals (Fig. 1, o), leaves deciduous.  
20. Tepals subequal, the outer whorl not simulating a calyx; flowers appearing before the leaves (sometimes continuing in flower as the leaves expand); tepals white to rose or rose-purple.  
21. Leaves elliptic to oblong-ovate, usually rounded at the base and usually over 15 cm. long, with 12 or more pairs of lateral veins.  
22. Flowers large, up to 25 cm. in diameter with 12–16 tepals.  
*M. Campbellii* (incl. *M. mollicomata*).  
22. Flowers up to 20 cm. in diameter with 9 tepals.  
*M. × Veitchii.*
Leaves broadest above the middle, cuneate at the base and mostly under 15 cm. long, with not more than 12 pairs of lateral nerves.

Flowers erect on the branches, leaves apiculate or abruptly short-acuminate at the apex.

Tepals 9, tapering downward to a broadish base, flowers cup-shaped.

Tepals subequal in length, white, occasionally with a rose coloration at the base.

M. denudata.

Three outer tepals somewhat shorter than the inner six, pink to reddish-purple outside, white within.

M. × Soulangeana.

Tepals 12 or more, much narrowed at the base; flowers saucer shaped.

Flowers large, up to 20 cm. in diameter, the tepals rosy-pink outside, white within; leaves broadly obovate, villose along the main veins beneath, often with scattered hairs over the entire surface.

M. Sprengeri var. diva.

Flowers up to 10 cm. in diameter, the tepals white both within and without, sometimes flushed with purple toward the base; leaves lanceolate to narrowly obovate, the lower surface glabrous or glabrate.

M. Sprengeri var. elongata.

Flowers borne horizontally, nodding or pendent, occasionally erect; leaves usually rounded and often emarginate, rarely apiculate, at the apex.

Leaves subcoriaceous or chartaceous, not strongly reticulate above, the under surface pubescent; tepals 10–16, white within, rosy-purple without.

Slender, tall tree; leaves obovate, tepals 10–14, narrowly spatulate.

M. Sargentiana var. Sargentiana.

Large shrub or wide-spreading tree with several branches from the base; leaves oblong-ovate, tapering and slender; tepals 10–16, broadly spatulate and overlapping.

M. Sargentiana var. robusta.

Leaves coriaceous and strongly reticulate above, the under surface glabrous; tepals 9–12, white, flushed with rosy-purple outside.

M. Dawsoniana.

Tepals very unequal, the outer whorl shorter and simulating a calyx (Fig. 1, o), these outer tepals sometimes early deciduous, flowers appearing before or after the leaves.

Flowers appearing before the leaves (sometimes continuing in flower as the leaves expand); inner tepals purplish or white, white tepals sometimes flushed at the base with rose or purple.

Inner tepals 6, the outer 3 tepals not early deciduous and much smaller than the inner 6.

Flowers purplish or sometimes nearly white, the outer 3 tepals petaloid, ca. one-half as long as the inner tepals.

Flowers white, the outer 3 tepals greenish, sepal-like, less than one-half the length of the inner tepals (Fig. 1, o).

Leaves lanceolate to lanceolate-elliptic, widest at or below the middle, tapering gradually to an acute apex; blades with hairs along the veins below, or finely appressed-pubescent or with scattered hairs over the entire surface below.

Leaves coriaceous with hairs along the veins beneath; vegetative buds on mature growth densely silky-sericeous.

Leaves chartaceous, finely appressed-pubescent or with scattered hairs over the entire surface beneath; vegetative buds on mature growth glabrate or finely pubescent.

M. Biondii.

M. salicifolia.
32. Leaves elliptic to obovate, widest above the middle, abruptly short-acuminate, acute, or rounded at the apex; blades with long hairs along the veins beneath.

34. Leaves elliptic, up to 5 cm. wide, with the apex rounded to acute; upper and lower surfaces of the blade strongly reticulate.

34. Leaves elliptic or more commonly obovate, up to 10 cm. wide, with an abruptly short-acuminate apex, the under surface of the blade reticulate, the upper surface smooth.

M. cylindrica.

M. Kopus var. Kopus (incl. some forms of M. × Loebneri). 8

30. Inner tepals (9-11)11-20(-30), the 3 very much smaller outer ones often early deciduous.

35. Leaves oblanceolate, widest above the middle, tapering gradually to a cuneate or acute base, the under surface glabrescent or with hairs along the veins; tepals 15-20(-30).

M. Kopus var. stellata (incl. some forms of M. × Loebneri). 6

35. Leaves elliptic, widest at or near the middle, tapering to a broadly cuneate or almost rounded base, the under surface finely appressed-pubescent over the entire surface with longer hairs along the veins; tepals 9-16.

M. × Proctoriana.

29. Flowers appearing with or after the leaves; inner tepals purple or green to golden-yellow.

36. Inner tepals purple.

36. Inner tepals green to golden-yellow.

37. Stem of current year and previous year glabrous, with hairs only at the terminal bud scar and on the upper and lower adjacent internodes to this scar, tepals greenish to greenish-yellow throughout, or greenish-yellow outside and golden-yellow inside, 3-9 cm. long; pedicel glabrous or rarely villous; leaf tomentose to glabrous below.

38. Leaves tomentose on lower surface; base rounded, truncate, cuneate, acute or rarely subcordate.


39. Flowers greenish-yellow outside and clear golden-yellow inside on inner tepals.

M. acuminata var. acuminata. 6

M. acuminata f. aurea.

38. Leaves glabrous or early glabrate with scattered hairs remaining on the veins beneath; base mostly rounded, truncate or subcordate, rarely cuneate or acute.

M. acuminata var. ozarkensis.

37. Stem of current and previous year with short hairs or roughened with the bases of hairs; tepals greenish-yellow throughout or more often light yellow outside and golden-yellow inside, 2.5-7 cm. long; pedicel typically villous, rarely glabrous; blades tomentose beneath.

M. acuminata var. subcordata. 7
Acknowledgements

I would like to express my thanks to Drs. C. E. Wood, Jr., G. P. DeWolf, Jr., and R. E. Weaver, Jr., for their valuable suggestions and help during the course of this work. Figure 1 is the fine and careful work of the late Mrs. Dorothy H. Marsh and was prepared for a generic flora of the southeastern United States, a joint project of the Arnold Arboretum and the Gray Herbarium of Harvard University made possible through the support of the National Science Foundation (Grant GB-6459X, principal investigator, Carroll E. Wood, Jr.). It is reproduced here with the kind permission of Dr. Wood.

Stephen A. Spongberg

Bibliography


Millais, J. G. Magnolias. viii + 251 pp. frontisp. + 33 pls. London. 1927. [Key to species by J. E. Dandy.]


In addition to the references listed above, articles on Magnolia too numerous to mention individually have appeared in the following publications or special issues:


Notes

1 Magnolia hypoleuca Siebold & Zuccarini is the correct name of the taxon that is often referred to and sold as M. obovata Thunberg. The name M. obovata Thunberg is superfluous.

2 The correct name is Magnolia Sieboldii K. Koch, not M. parviflora Siebold & Zuccarini, which is a later homonym.

A nomenclatural problem exists in the treatment of *Magnolia Sprengeri* that may be solved by examination of the type specimen. No typical variety (var. *Sprengeri*) has been designated, and if one of the two varieties recognized here corresponds with the type of the species, it automatically would be designated var. *Sprengeri*.


Materials for Chair Seat Weaving

When temporarily at rest, Man first sat cross-legged on the ground or squatted on his haunches — the latter still a preferred resting posture in much of the Orient. In Egypt, several millennia before the birth of Christ, the lightweight, frame chair evolved with the seat frame filled in with cords made of twisted leaves of marsh plants (*Juncus, Cyperus*) or of palms. Cabinet-making did not evolve to that point in Europe for many centuries. Instead, stools and benches were made of crude boards or split logs with wooden pegs for legs. Chairs with wooden (plank) seats and backs began to appear as cabinet-making evolved in the Occident, and were used by ecclesiastic and lay nobility as a prerogative of rank.

It was not until the 17th century A.D. in Europe and somewhat later in the American colonies that the less cumbersome frame-seated chair like that developed by the Egyptians came into general use. An attempt then was made to find material to fill in the seats and backs.

Probably the first material used in Europe for weaving the seats was osier. Osier can be obtained from nearly any species of willow, if properly prepared. *Salix viminalis*, commonly called osier, and *S. vitellina*, the Yellow Willow, were the materials of choice for early craftsmen, who had long used them for basket-weaving. Still grown commercially, chiefly in Europe, these willow species can be seen at the Arnold Arboretum in the field opposite the administration building.

In the production of osiers, plants are started by taking one-foot sections of one-year-old shoots or branches. These are planted on two-foot centers in rows 18 inches apart. From each cutting one or two shoots should be allowed to develop. At the beginning of the third growing season, the sprouts are cut back to two or three buds from the base. Long new sprouts will arise from the remaining buds on the plant, and the process is repeated again each succeeding year.

The cut sprouts, known as "raw" osier, should have the bark stripped off after which they may be stored dry for a long period. Boiling the stems before stripping, a process known as
Wooden seat and carved wooden back, old German chair. Photo: R. E. Wheeler.

Splint-seated high chair — early American. Photo: R. E. Wheeler.
buffing, makes this operation easier and imparts a pleasant brown color to the material.

When used for seating, the osiers are used whole or split lengthwise in two or into four pieces and are soaked for some hours in water to make them more pliable.

Osier at its best produced a coarse weave that must have been uncomfortable to sit on; though the heavy homespun clothing of the period when it was chiefly used perhaps made it more tolerable. There were other disadvantages, too, not the least of which was the tendency of the woven twigs to crack and break. At any rate osier was soon displaced for chair seating by more durable products, and the sturdy old chairs on which it was used are hard to find now, even in antique shops.

Osier was soon replaced by flat splints, another material borrowed from basket-making. These were made by removing the outer bark from young trees three or four inches in diameter. The stems, cut to the required length, were then beaten all over with a mallet to destroy the vessels of the spring wood in the annual rings. This treatment separated the annual rings one from another; the rings then were split up into strips to be dried and sliced lengthwise into ribbons of even width. After being soaked in water, these strips were rendered pliable enough to weave around the seat frames to make more attractive, comfortable and durable seats than those of willow. The rest of the tree was not wasted: ash and hickory wood made the best plough and axe handles, and chair parts. The fragile-looking Hitchcock chairs owe their durability to these rugged woods as much as to the care with which they were assembled.

The hickories were favored among early substitutes for willow because their strips or splints were tougher and longer-lasting in use. Species most commonly employed were *Hicoria lacunosa*, shellbark, *H. glabra*, pignut, and *H. ovata*, shagbark; this last, a favorite because its outer bark was so easily removed. Specimens of these three may be seen today in the collections at the Arnold Arboretum.

Conservationists will be happy to learn that splints from these valuable trees have in turn been replaced by even more practical materials, also of plant origin. True splints now are only available on special order, if at all.

A singular variant on the splint seat came about when the Shakers in Pennsylvania began weaving comfortable and easily replaced chair seats out of heavy cotton ribbon. When the warp and woof ribbons were dyed in contrasting colors, the various kinds of weave (basket, herringbone, etc.) produced an effect
Left to right: Round reed; flat reed; coarse cane; fine cane.

Left: Flat reed.
Right: Coarse cane.
Scirpus americanus. Photo: R. E. Wheeler.

Left: Fibre rush.
Right: Reed.
quite gay for such an austere sect. This type of ribbon can still be purchased at the Shaker Shop on the Common in Concord, Massachusetts.

Splint, in turn, was displaced in Europe and the American colonies by twisted cords of marsh plant leaves much as the Egyptians had used them centuries before. The long, narrow leaves of several species of bulrush, cat-tail and even of wild iris were used. Favored in America were bulrushes of the genus *Scirpus*; indeed *S. americanus* came to be known as the “chairmaker’s rush”. Leaves of cat-tail, particularly the species *Typhus angustifolia*, furnish the bulk of natural “rush” commercially available today.

Ardent workers don’t need to buy the material, however, for this plant grows abundantly in marshes and water-filled roadside ditches. The leaves are harvested toward the end of August when they begin to turn brown at the tips. They are dried in the shade outdoors or in attic or cellar indoors to preserve the pleasant green color, and stored away from any dampness that might make them moldy. Properly cured and stored they can be used for a year or more.

The weaving of a chair seat with natural rush is done with a continuous cord composed of two or three moistened, tightly twisted rush leaves to which new leaves are added progressively to maintain a uniform cord size. The cord is carried over and under the frame rails in figures-of-eight at each successive corner around the chair until the whole seat is filled in.

The knack of producing an even thickness of rush cord is not readily mastered by the amateur. Fortunately there is a practically indistinguishable substitute made of another vegetable material — tightly twisted, tough paper commercially known as “fiber”.

The need for proper preservation of both natural rush and fiber seats is not generally understood. Routinely given a coat of shellac, the interval between coats depending on the degree of use, these seats will last indefinitely; otherwise they need periodic replacement.

When American clipper ships spurred trade with the Orient, a revolution in chair making and weaving began. Among other cargoes, they brought back rattan which is derived from the stems of a number of climbing palms native to the East Indies. Entire chair frames, legs and backs could be made from the tough stems as well as walking sticks, polo sticks, ski poles, etc.

The outermost layer or rind of these plants is a hard, shiny substance which is taken off in strips and becomes the “cane”
Carya ovata. Photo: H. Howard.
sold commercially for basket-weaving and chair seating. Cane can be obtained in widths from “superfine” — barely a millimeter wide — to “coarse” about 5 millimeters wide. The last are almost the size of narrow splints, for which they can be substituted. Cut into long strips of even width, cane is strong, pliable (when moistened), durable (wet or dry) and requires no maintenance.

The weaving of cane-seated chairs was done originally by threading double strands of cane through evenly spaced holes in the front and back of the seat frame to make what, in cloth-weaving terminology, would be called the “warp”. The “woof” strands then were woven in through similar holes in the side frames. The weave was further strengthened by two diagonals producing the durable and attractive hexagonally-holed pattern.

During the last few decades this difficult weave has become available in machine-made sheets which are simply cut somewhat oversized, wedged into grooves in the side rails, and glued with splines to hold the cane in place. Beautiful reproductions of antique chairs are sometimes sold as genuine antiques; but if the seat is retained with splines instead of holes through the frame, the fraud can be readily detected.

Either type of cane seat would be virtually indestructible if the manufacturers took the trouble to round the inner edges of the seat frame. The weight of the occupant tends to cut the cane against a sharp-edged frame, particularly at the front of the chair, and periodic replacement becomes necessary.

When the rind of rattan stems is removed to produce cane, the tough fibrous inner portion is cut in various shapes and widths. Long, flat strips become the flat “reed” of commerce — an ideal substitute for the hickory and ash splints of long ago and far less expensive. Long pieces, round in cross-section, become the round “reed” of commerce — ideal substitutes for osier which is available here only as an import.

Finally, the Orient has provided a partial substitute for natural rush in the form of “Hong Kong Grass”. This is made from the fine twisted leaves of salt-marsh grasses. While it is only available in a thin, string-like gauge of any specified length, it is surprisingly strong and can be purchased in a variety of colors. It is often used either in an open or closed weave on modern chairs. This product is not to be confused with Raffia — a less substantial material made by stripping and drying the cuticular layer from the leaves of the Madagascar palm, Rhaphia raffia, or the Japanese one, R. taedigera. Raffia has more basketry than chair seat applications, but can be used as part of the binding-off strip around the edges of cane seats.
Salix purpurea lambertiana. Photo: H. Howard.
Today many homes have at least one chair, often of antique value, which has lost favor because its seat is no longer sound. Years ago this would not have posed a problem; but the current shortage of craftsmen able to make authentic and durable repairs almost dictates that we learn the craft ourselves.

It is an extremely interesting and challenging hobby, as well as a practical occupation; one particularly suited to the elderly or handicapped. A little patience, modestly-priced materials, and a few simple tools found in every household are all that are needed for the work.

Expert guidance and advice are obtainable at adult education courses; several books also detail the procedures clearly. The author recommends Seat Weaving (II), by L. Day Perry (Washington, D.C.: Hobby House Press 1940) and Chair Seat Weaving for Antique Chairs by Marion Burr Sober (Michigan Graphic Corporation, Whitmore Lake, Michigan 1964). In addition, Yankee and Early American Life magazines periodically carry advertisements of mail order firms * offering the supplies which sometimes are difficult to procure locally.

It is hoped that the foregoing historical and practical notes also will assist the novice in his restorative efforts.

RALPH E. WHEELER, M.D.

(Dr. Wheeler, a resident of Brookline, is Emeritus Professor of Bacteriology at the Tufts University Medical School. His hobby is the restoration of antique chairs.)

* The traditional supplier in New England is the H. H. Perkins Co., 10 South Bradley Rd., Woodbridge, Conn. 06525. Its catalog lists most of the materials discussed in this note as well as tools and kits containing chair parts of early American antique reproduction for do-it-yourself assembly; also, books on seat weaving and on furniture refinishing (often a necessary preliminary to replacing the seats of antiques).
The Shadbushes

As I was growing up in the rich farming country of southeastern Pennsylvania, one of my greatest pleasures was to walk through the fencerows and woodlots in April, searching for signs of spring. Herbs like Hepaticas and Bloodroots were always welcome finds, but I will never forget the Shadbushes. Looking across the brown and gray countryside to a woodland lined with these trees in full bloom never failed to lift my winter-weary spirit. Ever since, I have looked on these plants with a special fondness, a prejudice that may color some of my statements and descriptions in the present article.

These attractive members of the Rose Family are known by a variety of common names: Serviceberry or its corruption, Sarvisberry, from the resemblance of the fruit (not actually a berry) to that of the European Service-tree, a species of Sorbus; Juneberry, because the fruits of several species ripen in June; and Shadblow or Shadbush, because most species in the eastern United States started to bloom as the shad began to ascend the rivers. My preference for the last of these is based merely on a personal prejudice. It was the name by which I first learned the plants, and it is somewhat more romantic than the rest. The generic name Amelanchier is probably derived from “amelanche”, the name of the European species in Provence, a section of southeastern France.

Like so many of our native trees and shrubs, the Shadbushes have been largely neglected by gardeners, even though they are of considerable ornamental value. Most of the species are colonial shrubs, spreading by woody underground stems which send up innumerable aerial shoots, often forming dense clumps or small thickets in the process. A group of species, however, grow into small or medium-sized trees, usually with one or two trunks, but occasionally with more.

The arborescent species are probably the best from an ornamental viewpoint. The flowers appear in late April in New England when no other trees, except for the early Cherries and Magnolias, provide a spectacular showing. Although the flowering period may be short, perhaps only three or four days if the
The airy elegance of Amelanchier arborea in full bloom. Photo: H. Howard.
weather is hot or rainy, the display, in my opinion, is incomparable. It is a soft and delicate show, without the gaudiness of a Magnolia or a Crab Apple, entirely in tune with its season. One of the most beautiful sights in the Arnold Arboretum is the specimen of *Amelanchier arborea* planted on the edge of the Junipers near Bussey Brook. This tree, 30 feet tall and with a trunk diameter of 15 inches, is covered with a misty shroud of white in late April. To one driving or walking up Bussey Hill, it stands like a beacon among the drab brown of the field and the green of the conifers.

With their wonderful floral display in the springtime; the delicious fruits in early summer; the brilliant red-orange of the foliage in the fall; the smooth, soft gray, somewhat striped bark in the winter; and the tidy, graceful shape always, these are trees for all seasons. If one wanted a medium-sized specimen for a large or small yard, I could hardly think of a more beautiful plant. In a naturalized setting, by a pond or the edge of a woodland, only a Dogwood could be better.

The shrubby species of Shadbush are of somewhat lesser ornamental value. Although they are attractive in flower, and the fruits in some cases are superior to those of the arborescent species, there are many shrubs with a more durable, colorful bloom that would be more desirable for the average gardener. If used in a naturalized planting, however, all species can be very effective, and the tall, fountain-shaped *Amelanchier canadensis* would be suitable as a specimen plant or a deciduous screen.

All Shadbushes are susceptible to attack by a number of pests common to many rosaceous trees, which limits their usefulness. Lacewing fly, red spider, various scales, and fireblight all can become serious problems; if any of these are rampant in an area, Shadbushes, or any other rosaceous plants, should be planted with caution.

The fruit of the Shadbush is not a berry, as implied by the common names “Juneberry” and “Serviceberry”; rather it is a small pome, the technical name for a type of fruit found only in certain plants of the Rose Family, including Pears, Apples, Hawthorns, Mountain Ashes, and Pyracanthas, as well as Shadbushes. In most of the species they are 1/4-3/8 inch in diameter, firm but juicy in texture, sweet tasting, and basically dark red-purple in color, but thinly covered with a bluish, waxy bloom, as in blueberries and grapes. The fruits are high in Vitamin C content and were used as food to some extent by the American Indians of the eastern forests, as well as by the early

*Amelanchier canadensis, one of the clump-forming species of Shadbush.*
*Photo: H. Howard.*
The smooth, striped bark of a mature Amelanchier arborea. Photo: P. Bruns.
settlers. But it was the Indians of the prairies, with a dearth of other fruits to choose from, who used them most extensively. They crushed the fruit of *Amelanchier alnifolia* with dried bison meat and fat; the resulting mixture, called pemmican, served as their primary winter food. The Cree name for the fruits was *Mis-sask-qua-too-min*, or some similar phonetic rendering. Shortened to “saskatoon” by the fur traders, the name is still used to refer to *A. alnifolia*, and it was given to a city in Saskatchewan in whose environs the plant was abundant.

There has been some interest recently in growing several species of *Amelanchier* as commercial crops. Several cultivars have been named on the merits of their superior fruit. The earliest, “Success”, a cultivar of *A. canadensis*, was offered for sale as early as 1878. The flowers are resistant to late frosts, and the fruits ripen evenly making them amenable to mechanical harvesting. However, the fruits deteriorate in flavor rapidly upon standing, limiting their commercial possibilities. So Shadbushes probably will remain basically a “home crop.” The fruits are delicious when served fresh, and they make excellent preserves. They also can be used like more traditional fruits as a pie filling, or in muffins, much like blueberries.

The fruits of the Shadbushes are attractive to a wide variety of birds. This may be good or bad, depending on one’s point of view. They generally last only a very short time here at the Arboretum. If a homeowner wishes to save the fruits for his own use, at least in a quantity large enough to make the effort worthwhile, it may be necessary to cover the plants with a cheap netting as the fruits are maturing. If one is interested in planting trees or shrubs to attract birds, a species of Shadbush would be a good choice. But a word of caution from a friend of mine: do not plant such a tree near a patio or any other place where one would like to sit out on a pleasant late June evening. The fruits have rather an immediate effect on the birds.

Most of the 20-30 species of *Amelanchier* are native to North America, but three species are found in Europe, North Africa, and southwestern Asia, and another in Japan, Korea, and China. All the American species are mostly closely interrelated and quite similar in general appearance. Therefore their identification is difficult for the layman. In addition, hybrids occur between many of the species, both in the wild and in cultivation. These hybrids are usually intermediate between their parents in many respects, making identification even more difficult.

Below is a list and a key to the identification of the species of Shadbush which are most commonly encountered in cultivation
Amelanchier arborea (as A. canadensis), from the Silva of North America by C. S. Sargent. 1, flowering branch; 2 floral diagram; 3, vertical section of flower; 4, stamens; 5, cross section of ovary; 6, ovule; 7, fruiting branch; 8, vertical section of fruit; 9, cross section of fruit; 10, seed; 11, embryo; 12, winter buds.
in the Northeast. [For a summary of how to use a key, as well as an explanation of terms, see the March, 1972 issue of *Arnoldia* (Volume 32, pp. 59–97).] The key makes use of flower, leaf, and fruit characters. Therefore for identification it is necessary to make observations, perhaps aided by photographs and pressed specimens, at different seasons of the year. Keys of this sort are frustrating to use, but in the case of difficult plants like the Shadbushes, they are frequently the only ones possible to construct.

KEY TO THE SPECIES OF *AMELANCHIER* MOST COMMONLY CULTIVATED IN THE NORTHEAST

1. Flower clusters held horizontally or slightly drooping; plants tree-like, usually with 1–5 trunks, sometimes shrub-like with many trunks, but at maturity more than 12 feet tall.
   2. Unfolding leaves densely hairy.
      3. Unfolding leaves bronze or purplish. *A. × grandiflora*.
      3. Unfolding leaves green or silvery white.
         4. Fruits dry and insipid; mature leaves hairy beneath, at least along the veins. *A. arborea*.
         4. Fruits juicy and sweet; mature leaves not hairy, except perhaps on the stalk. *A. asiatica*.
   2. Unfolding leaves not or only sparsely hairy. *A. laevis*.

1. Flower clusters held erect, colonial or clump-forming shrubs, with many stems, often less than 6 feet tall.
   5. Stalks of fruits and mature leaves hairy. *A. ovalis*.
   5. Stalks of fruits and mature leaves not hairy.
      6. Petals 1/2 inch long or longer. *A. sanguinea*.
      6. Petals 3/8 inch long or less.
      7. Top (in the area between the tooth-like projections) of the fruit hairy; low shrubs, less than 6 feet tall. *A. spicata*.
      7. Top of the fruit not hairy; tall shrubs, more than 6 feet tall at maturity. *A. canadensis*.

*Amelanchier arborea*. Downy Shadbush. Found in dry to moist woods or clearings throughout the eastern half of the United States (west to Iowa and Oklahoma), this species is generally a shapely small tree in cultivation. Although seldom growing more than 30 feet tall, the largest recorded specimen, growing near Standish, Michigan, is 48 feet tall with a trunk circumference of 10 1/2 feet and a spread of 76 feet. The name *A. canadensis* has been applied erroneously to this plant by many authors, including Alfred Rehder in his *Manual of Cultivated Trees and Shrubs*. It may be distinguished from *A. laevis*, the only other arborescent Shadbush native in the Northeast, by the downy, silvery-white unfolding leaves and the dry, insipid fruits.
It was cultivated in England as early as 1746, and probably earlier in this country. At the Arnold Arboretum the tree blooms from early April to early May, and the fruits are ripe in mid-June.

**Amelanchier laevis.** Alleghany Shadbush. Similar to and often confused with the preceding, this species grows in woodlands and thickets from Newfoundland and Minnesota southward to Missouri and Indiana, and in the Appalachians to Georgia. It holds the record for size among Shadbushes. The largest individual, from Siler's Bald in Great Smoky Mountains National Park, is 60 feet tall with a circumference of 6 feet, 2 inches. Its bronze-colored unfolding leaves and delicious fruit, as well as the spectacular floral display, make this one of the more desirable of the Shadbushes. At the Arnold Arboretum it blooms from late April until mid-May, and the fruits appear in late June.

**Amelanchier X grandiflora** (also known as *A. confusa* and *A. lamarckii*). Apple Shadbush. This is apparently a hybrid between the above two species. The type specimen was collected in the Botanical Garden of the Forest Academy at Münenden, Germany, but the plant is also known in the wild. Specimens have been collected in several states from New Hampshire to Missouri and Georgia, and it is apparently naturalized in parts of Europe. It is more floriferous than its parents, the fruits are larger and more succulent, and the unfolding leaves are purplish. All in all, it is probably the handsomest of the Shadbushes. A form of this plant, 'Rubescens', found as a spontaneous seedling in Seneca Park, Rochester, New York, has flowers which are purplish-pink in bud and suffused with pink when open.

**Amelanchier asiatica.** Asiatic Shadbush. A native of Japan, China, and Korea, this plant was introduced into the United States in 1865. It is not common in cultivation. It is similar to *A. arborea*, but it has palatable fruit and blooms somewhat later.

**Amelanchier canadensis** (*A. oblongifolia*). Thicket Shadbush. A species of bogs, swamps and other low areas chiefly in the Atlantic Coastal Plain from Newfoundland to Georgia, this differs from all of the preceding in that it is never treelike, although it may grow to be 25 feet tall. In the wild it often forms dense clumps, hence its common name. This same attribute makes it desirable in cultivation where a tall, deciduous screen is wanted. It was reputedly cultivated in this country as early as 1641, the succulent fruits undoubtedly providing a welcome addition to the diet of the early settlers. In the Arnold Arboretum this
Amelanchier arborea, shown here, and several of its close relatives form tidily shaped, small to medium-sized trees. Photo: P. Bruns.
species blooms during the first half of May and the fruits ripen in early July.

*Amelanchier sanguinea*. Round-leaved Shadbush. Native to woods, thickets, and lake shores from Maine westward along the Great Lakes to Minnesota, with a few isolated stations in the mountains of North Carolina, this is perhaps the best of the shrubby species for general cultivation. It is of medium height (3–9 feet), it has large flowers, and the fruits are particularly tasty. Here it blooms during May and the fruits ripen in mid-July.

*Amelanchier spicata*. Low Shadbush. A low, colonial shrub, growing from 1–6 feet tall, this species occurs in woods and thickets, sandy barrens, dunes, and other open places in eastern North America from Newfoundland to the eastern Dakotas, south to Missouri, Ohio, and Georgia. The correct name for this plant is the subject of considerable debate. Some authorities break it down into several species, with names including *A. stolonifera* and *A. humilis*. And, due to confusion as to the identity of the plant which the original author had in mind, some botanists use the name “spicata” to refer to an entirely different plant, a hybrid between *A. canadensis* and *A. ovalis*. At the Arnold Arboretum this species blooms during the first half of May and the fruits ripen in early July.

*Amelanchier ovalis* (*A. vulgaris*). Snowy Mespilus. The only Shadbush native to Europe, this species is rarely cultivated in the United States. It is an attractive shrub with large flowers and palatable fruits, and it was grown in Europe as early as the 16th century. In this country it grows to 6 feet tall; it blooms in early May and the fruits ripen in late June.

One or more of the above species is offered for sale by many nurseries. Raymond Nelson, in DuBois, Pennsylvania even specializes in one of them (probably *Amelanchier laevis*) which he calls the “Sarvistree”.

**Richard E. Weaver, Jr.**
Dykes Medal Iris at the Case Estates

The highest award an iris can receive in the United States is the Dykes Medal sponsored by the American Iris Society. Usually the long climb upward to this honor begins when the iris receives the High Commendation (H.C.) award as an unintroduced seedling. Once it has been introduced it can be considered for the Honorable Mention (H.M.) award. After this award is given, two years must elapse before it is eligible for the Award of Merit (A.M.); a maximum of twelve iris may receive this award in a single year. Again, two years must pass after winning the A.M. before a plant is eligible for the Dykes Medal; only one medal is allowed each year.

More than 500 named cultivars of iris are introduced into commerce annually, so one can understand how small the chance is that an iris will eventually win the Dykes Medal. When dealers list an iris as having recently won this coveted award, one can be reasonably sure that it is excellent from almost all standpoints. A gardener should feel confident when buying such an iris that it is an aristocrat.

The American Iris Society has registered more than 600 authorized judges in the United States, many of whom have wide leanings regarding their likes and dislikes in iris. If, when the votes are finally tabulated for the Dykes Medal, no variety receives at least 15 percent of all the votes, the award is not given that year. This situation occurred in 1946, 1960 and 1969.

Formerly, the Arnold Arboretum attempted to maintain a collection of all the Dykes Medal winners from 1927 to the present in the display area of the Case Estates in Weston, Massachusetts. This was not only difficult but of questionable value to the average gardener. Some of the older cultivars like 'San Francisco', which won the award in 1927, were bred in California and were either trying or impossible to grow in our New England climate. Other older varieties had little appeal except from a historical standpoint. If a gardener took a liking to one of these, chances were it would have been unavailable in the trade for a long time; even award winners going back much beyond 15 years are not readily obtained.

Iris 'Stepping Out'.  Photo:  G. Pride.
Iris 'Winter Olympics'. Photo: G. Pride.
A new bed of Dykes Medal iris has been established at the Case Estates in the area near the daffodil collection. Starting with 1957, an arbitrarily selected year, the line up is as follows:

1958: 'Blue Sapphire', a heavy substanced light blue.
1959: 'Swan Ballet', a ruffled white self.
1960: no award
1962: 'Whole Cloth', a new pattern in white and medium blue.
1965: 'Pacific Panorama', a large, ruffled sea-blue.
1966: 'Rippling Waters', an outstanding blue-orchid and cream blend.
1967: 'Winter Olympics', an intensely ruffled, large white self.
1968: 'Stepping Out', an excellent snow-white with blue-violet markings.
1969: no award
1970: 'Skywatch', a very large, ruffled lavender self.
1971: 'Debby Rairdon', a beautiful white and soft yellow.
1972: 'Babbling Brook', a ruffled blue.
1973: 'New Moon', a large ruffled, light yellow self.

It takes so long for an iris to receive a Dykes Medal that usually ample stock is available in the trade by then, and the price is reasonable considering the high quality of the cultivar.

We were fortunate to have all these varieties donated by members of the “Friends of the Arnold Arboretum” so that no expense was involved in obtaining the rhizomes.

The tall bearded iris generally are in full flower during the first week in June; an excellent time to view this small but potentially effective display.

George H. Pride

The idea of "nature printing", making prints directly from leaves or entire plants, is not a new one. Wilfrid Blunt, in The Art of Botanical Illustration, states that the process was developed as early as the 15th century and was periodically rediscovered, refined, and modified during the 18th and 19th centuries, culminating in von Ettinghausen's Physiotypia of 1853–73. Ida Geary, the authoress of the present book under notice, credits Leonardo da Vinci as the first to experiment with the process. Basically, it involves applying a pigment or some transferable substance, whether it be an ink or soot from a candle, to the surface of a pressed or living plant surface and then laying the plant on paper and pressing or rubbing an impression onto the paper.

The Leaf Book is purportedly, as the subtitle states, a guide to the plants of northern California. The book consists of a total of 261 plant prints and one drawing (of poison oak, to which the authoress states she is allergic) loosely arranged in categories, which include marine algae; fungi, lichens, and mosses; ferns and fern allies; grasses, sedges, and rushes; wild flowers; shrubs; and trees. The placement of the nature prints within these categories is something less than scientific, as is exemplified by the inclusion of a cat-tail (Typha sp.) and a bur-reed (Sparganium sp.) along with the ferns and fern allies. Each plate is labeled with a common and scientific name, along with a short caption intended to help in positive identification. The idea is that the plant prints are the main aid in identification. Unfortunately, the majority of prints are muddy and unclear, and in most instances one would have to be familiar with the plant in question before it would be recognizable in the nature print. It would seem to me that anyone interested in learning and identifying the more common plants of northern
California would be far ahead to consult one of the several pocket guides that cover the flora of the region, many of which are profusely illustrated with clear color photographs and diagnostic line drawings.

**Stephen A. Sponberg**


This is the first of a projected six-volume flora covering an area which includes all of Utah, most of Nevada, and smaller portions of Arizona, Oregon, Idaho and Wyoming. Somewhat more than half of the present volume is devoted to introductory essays, physiography, plant geography and a most useful biographical section entitled "Botanical Explorations in the Intermountain Regions" (36 pages).

The Flora proper follows the pattern of the New York Botanical Garden floras; large page size, each species illustrated, and ample ecological and other notes at the end of each description. Volume one includes the Ferns, Fern worts, and Gymnosperms (including Ephedra). It looks like an interesting and useful series for anyone interested in the plants of the West.

**Gordon P. Dewolf, Jr.**


In *Landscape Gardening* we have another beautiful coffee table book that offers a good deal of general information and sets some lovely moods with its flowing text and stunning photographs.

The author provides good introductory comments, some useful guidelines for each topic he chooses to pursue, and the photographs often furnish new ideas of ways to handle problems.

However one is left with a feeling that the essentials, the nitty-gritty stuff that makes *real* landscape gardening, have
been left out. The emphasis here is on the "homeowner", most certainly the suburban clientele at which this series of books is aimed. There is a quotation from Robert Roylston which doesn't seem to have influenced Mr. Crockett: "... But not everyone can have one-half to three-quarters of an acre to let nature flourish for him alone, there's not that much nature to go around. It stretches our resources too thin . . ."

Now is the time for a book that starts here and faces the needs of a community that is ecologically and sociologically concerned and active. The Time-Life editors should start publishing books with real information for us to put into practice; not picture books that are out of date as they come to the stands.

JACK LINK


This is the era of the reprint book. Contemporary hard-cover titles are reprinted in paper back. Out-of-print titles are reprinted verbatim. Antique books are reprinted with scholarly introductions, explaining their importance and setting them, and their authors, in the proper milieu. Cornut's Canadensium Plantarum . . . Historia has long been a sort of mythical book, mentioned with bated breath in lectures on the history of botany, or botanical art, as a milestone in human intellectual progress, as the "first North American Flora"; very rarely as containing the "first flora of Paris".

Let there be no mistake, it is good to have a reprint of Cornut at a reasonable price. It is good, too, to have the available information about Cornut brought together and digested. It is unfortunate that the introduction imputes to the plant descriptions and illustrations greater accuracy than actually exists. Many of the illustrations lack sufficient detail to be readily identifiable, and the descriptions are not very helpful. Further, in many cases the nativity of the plant is not given. We may note that Canada, the West Indies, Southern Europe and the Near East, and the Cape of Good Hope, are all represented.

It is unfortunate that the author of the introduction did not consult a botanist or horticulturist before producing his list of "probable modern identifications" of the plants mentioned and/or illustrated. Of the 78 plants cited, 20 were either unidentified, incompletely identified, wrongly identified, or incorrectly named.

9 Thlaspi luteum spanospermon = possibly a European *Epilobium* similar to *E. alpinum*, L. ?

17 De Valeriana = *Epilobium*, if American probably *E. coloratum*, but it could equally well be a European species.

21 Valeriana urticaefolia flore albo = *Eupatorium rugosum*.

32 Polygonatum spicatum sterile = typical form of *Smilacina stellata* (L) Desfontaines.

34 Polygonatum spicatum fertile = cited by Linnaeus in the original description of *Convallaria* (*Smilacina*) *stellatum*.

39 and 41 Polygonatum ramosum flore luteo maurus] *Uvularia perfoliata* or Polygonatum ramosum flore luteo minus] *U. grandiflora*.

82 Rhamnus myrtifolius ex insula sancti christophori = There has been a mix-up of names between this plate and the next. This plate is *Primula vulgaris* Hudson (*P. acaulis* (L) Hudson).

84 Carchichec turcarum sive primula veris constantinopolitana = the name refers to the previous plate. This illustration seems to be a sterile twig of a *Cassia*.

95 Ranunculus latifolius multiplex serotinas = a double-flowered form of *Ranunculus bullatus* L. which seems to have been lost to cultivation for more than 200 years.

100 Edera quinquefolia canadensis = *Parthenocissus quinquefolia* (L) Planch.

124 Scordium spinosum odoratum = *Teucrium spinosum* L.

142 Millefolia tuberosa = *Filipendula hexapetala* Gilib. a common old-fashioned garden perennial native from Scandinavia to Siberia. Not native in North America.

154 Narcissus pumilus indicus polyanthos = *Crinum*, possibly *C. lineare* from South Africa.

158 Narcissus iaponicus rutilo flore = *Nerine sarniensis* (L.) Herb.


165 Sisynrichium indicum = *Spiloxene capensis* (L.) Gar-side (= *Hypoxis stellata* (Thunberg) L.f.).
Solidago maxima americana = *Solidago sempervirens* L.


Bellis Ramosa umbellifera = *Erigeron annuus* (L.) Pers.

Calceolus Marianus canadensis = *Cypripedium reginae* Walt.

**GORDON P. DEWOLF, JR.**


Originally published in a limited edition in 1911 as Part II of the Annual Report of the New Jersey State Museum for 1910, entitled “The Plants of Southern New Jersey with Special Reference to the Flora of the Pine Barrens and the Geographic Distribution of the Species”. The Quarterman edition has been enlarged to include a foreword of four pages by Elizabeth M. Woodford.

The pine barren area of New Jersey has long been recognized as a unique vegetational sector comprising some endemic species of plants; some with ranges northward to Newfoundland; some showing affinities on Cape Cod; some with continuous or disjunct ranges southward to the coastal plain of Georgia and Florida. Since Stone’s time, new highways have made additional areas readily accessible. A few portions of the area have been established as nature reserves, state parks, or state forests for preservation of the unusual plants and animals. Federal recognition of the sector as a landmark or national park was sought in 1967. Hopefully, this reprinting of Stone’s work will give additional impetus to steps toward preservation of the pine barrens and adjacent areas.

This reprint is well done, and the original illustrations of photographs, line drawings and paintings, not always well printed in the original, have lost but little in the current reproduction. Regrettably, no attempt has been made to bring the nomenclature up to date from that of the American Code used by Stone. The foreword suggests that the correct scientific name can be obtained, via the common name, from Gray’s *Manual of Botany*, or Britton and Brown’s *Illustrated Flora*. This is misleading since neither reference volume suggested offers syn-
onyms of scientific names, which are necessary to sort out the correct name from the several offered by Stone. Some of the common names used by Stone, checked at random, do not occur in either Gray or Britton and Brown. Reprinting of older and rare volumes is admirable. For some volumes it should be done without changes, but others like this one would be improved by at least an appendix of modern nomenclatural equivalents or the suggestion of references such as Jack McCormick's excellent "Pine Barrens of New Jersey, A Study of Significance", prepared by the Academy of Natural Sciences of Philadelphia in 1967.

Richard A. Howard

Downy Woodpecker. Photo: R. Weaver.
### Statement of Ownership, Management, and Circulation

**Date of Filing:** Sept. 26, 1973

<table>
<thead>
<tr>
<th>Statement of Ownership, Management, and Circulation</th>
<th>Postal Service Instructions on Page 2 (Reverse)</th>
</tr>
</thead>
</table>

1. **Title of Publication:**
   - AMBULIA

2. **Frequency of Issue:**
   - Bi-Monthly

3. **Location of Known Office of Publication:**
   - Harvard University, Jamaica Plain, MA. 02130

4. **Location of the Headquarters or General Business Offices of the Publisher:**
   - HARVARD UNIVERSITY, JAMAICA PLAIN, MA. 02130

5. **Names and Addresses of Publisher, Editor, and Managing Editor:**
   - **THE ARNOLD ARBORETUM OF HARVARD UNIVERSITY**, ARHARD UNIVERSITY, JAMAICA PLAIN, MA. 02130
   - **JEANNE S. WADLEIGH, ARNOLD ARBORETUM, ARHARD UNIVERSITY, JAMAICA PLAIN, MA. 02130**

6. **Known Bondholders, Mortgagors, and Other Security Holders Owning or Holding 1 Percent or More of Total Amount of Bonds, Mortgages, or Other Securities (If None, Enter As None):**

7. **Address:**
   - ARBINARY, Jamaica Plain, MA. 02130

8. **Purpose and Nature of Circulation:**
   - **A. Total No. Copies Printed (Not pulse extent):**
     - 3600
   - **B. Paid Circulation:**
     - 1. Sales through dealers and carriers, street vendors, and counter sales:
       - 3000
     - 2. Mail subscriptions:
       - 3325
   - **C. Total Paid Circulation:**
     - 3325
   - **D. Free Distribution by Mail, Carrier, or other means:**
     - 1. Samples, complimentary, and other free copies:
       - 60
     - 2. Copies distributed to news agents, but not sold:
       - None
     - **E. Total distribution (sum of C and D):**
       - 3385
   - **F. Copies used, lost, unaccounted, spoiled, after printing:**
     - 53.5
   - **G. Total (sum of E & F—should equal net press run shown in A):**
     - 3438.5

9. **Satisfaction of readers:**
   - **I certify that the statements made above are correct and complete:**

   **Jeanne S. Wadleigh**

---

**Notes:**
- **PS Form 208 (July 2012)**
- **Instructions:** See instructions on page 2 (reverse).
- **U.S. Postal Service:**
- **Statement:**
  - **Title:** AMBULIA
  - **Frequency:** Bi-Monthly
  - **Location:**
    - Harvard University, Jamaica Plain, MA. 02130
  - **Publisher:** THE ARNOLD ARBORETUM OF HARVARD UNIVERSITY
  - **Editor:** JEANNE S. WADLEIGH
  - **Address:** Arbinary, Jamaica Plain, MA. 02130

---

**Additional Details:**
- **Purpose and Nature of Circulation:**
  - **A. Total No. Copies Printed (Not pulse extent):**
    - 3600
  - **B. Paid Circulation:**
    - 1. Sales through dealers and carriers, street vendors, and counter sales:
      - 3000
    - 2. Mail subscriptions:
      - 3325
  - **C. Total Paid Circulation:**
    - 3325
  - **D. Free Distribution by Mail, Carrier, or other means:**
    - 1. Samples, complimentary, and other free copies:
      - 60
    - 2. Copies distributed to news agents, but not sold:
      - None
  - **E. Total distribution (sum of C and D):**
    - 3385
  - **F. Copies used, lost, unaccounted, spoiled, after printing:**
    - 53.5
  - **G. Total (sum of E & F—should equal net press run shown in A):**
    - 3438.5

---

**Signature:**
- **Jeanne S. Wadleigh**
ARNOLDIA is a publication of the Arnold Arboretum of Harvard University, Jamaica Plain, Massachusetts, U.S.A.