

Krossa's *M. cylindrica*, typical *M. salicifolia* and *M. dawsoniana*.

## "*Magnolia cylindrica*" A Chinese Puzzle

by J. C. McDANIEL

In Pennsylvania, Massachusetts, Michigan, Washington (Seattle), Sweden (Bjuv), the Royal Gardens at Windsor, England and elsewhere in the western world, a magnolia brought as seed from China in 1936 has made a very good name for itself as "*Magnolia cylindrica*." But it appears to me, as to others, that what we grow under this name is really something else, and that *M. cylindrica* Wilson, described from three summer-collected specimens taken in shady ravines on Wang shan (Yellow Mountain) in Anhwei Province in 1924 and 1925 is yet to be brought out alive to the U.S. or Europe.

In the same paper (Jour. Arn. Arb. VIII:92-110) in which Ernest H. Wilson described *M. cylindrica*, three other magnolias were listed as collected from the same province. Both *M. sieboldii* and *M. officinalis* var. *biloba* were found on Wang shan (the latter possibly cultivated) and *M. denudata* was represented by two collections from a nearby locality, woods on Chu hwa shan, altitude 600 meters, with a "tree 20 m. tall, girth of trunk 1.5 m. bark brownish gray, flowers white, tinged purplish at base; fragrant; very common." Unlike Wang

shan, Chu hwa shan is one of the Buddhist "sacred mountains," so these trees may have been planted. From herbarium specimens received at the Arnold Arboretum from the actual collector, Professor R. C. Ching, Wilson wrote, "The flowers of our new species are unknown but they appear before the leaves." He may have assumed that flowering season, from the other similarities of the new species to the Japanese *M. salicifolia*, to which he wrote "it is most closely related." However, "This very distinct new species is well distinguished by its thin, narrow, prominently reticulated leaves, by its slender petioles and by its cylindric fruits." In contrast, *M. salicifolia* "has rather larger leaves usually acuminate and glaucescent on the under side, glabrous winter buds and branchlets, and a smaller, much less cylindric fruit." In Wilson's Latin diagnosis, as I interpret it, *M. cylindrica* was described as a tree or shrub, 6 to 10 meters high; branches slender, sericeous when young, smooth at maturity; buds small, ovoid, acute, covered with gray to yellow-gray hairs. Leaves thin, deciduous, long petioled, the petioles slender, sericeous, 8-20 mm. long, blades oblanceolate-oblong to oblong-lanceolate, rarely oblong-obovate, 6-14 cm. (mainly 8-10 cm.) long and 2-5 cm. (mainly 3-4 cm.) wide, obtuse to subacute, base cuneate, rarely rounded, intensely green, upper side smooth and reticulate, under side pale and glabrescent . . . Fruit cylindric, 5-7.5 cm. long and 2-2.5 cm. diameter . . .

What we now have in cultivation looks quite different from Wilson's *M. cylindrica* description, and has the "flowers white, tinged purplish at base," as described for *denudata* trees in Anhwei woods. Perhaps this form, or more likely a hybrid with it, is what has been introduced in error as "*M. cylindrica*."

Gus Krossa, formerly of Livonia, Michigan, is one of those who grew trees from the seeds offered by the Lu-Shan Botanical Garden in Kiu Kiang, (or Chiuchiang) China, as *M. cylindrica* and *M. officinalis* var. *biloba*. Both were described in the advertisement as available for the first time. Presumably "*M. cylindrica*" seeds were from trees previously transplanted to Kiu Kiang within the previous decade. The *officinalis biloba* had been cultivated at "Ku Kiang" (another transliteration for Kiu Kiang) long before; Wilson described it from plants cultivated there before 1909, and noted that "this variety is also cultivated in the vicinity of Ningpo." (*Plantae Wilsonianae* 1:391-393.)

? Henry F.

Krossa and other purchasers of the Lu-Shan seeds grew *M. officinalis* var. *biloba* true to description, but their "*M. cylindrica*" seedlings have leaves and branches quite unlike those described by Wilson. Krossa, in *American Horticulture Magazine* 43 (2):114 did not give his own description of the leaves, except to say they "are rarely over five inches in length." This would fall within the 6-14 cm. length given by Wilson. But I have observed Krossa's two "*cylindrica*" trees, among others, and find that the leaves on them do not otherwise agree with Wilson's description as "thin, narrow, prominently reticulated . . ." The trees of "*cylindrica*" cultivated at the University of Washington Arboretum agree with Krossa's and not with the original description. Far from being thin, their leaves are among the more substantial among hardy deciduous magnolias, neither are they narrow nor prominently reticulated. I have so far not closely examined the "*cylindrica*" grown at the Henry

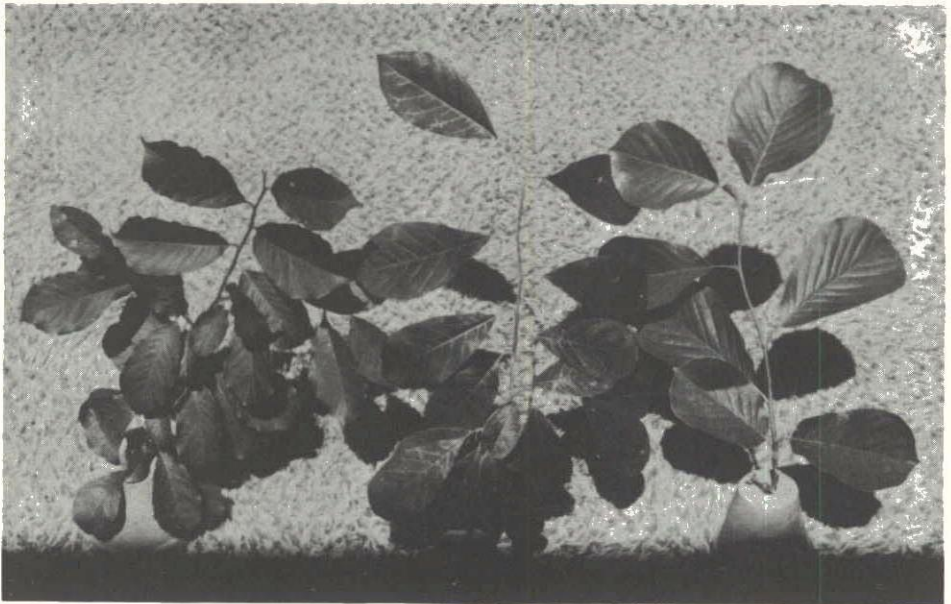


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Krossa describes the flowers that appear at Livonia around April 25 as about 4 inches long, opening widely only when fading. He states, "This pleases me more than any magnolia bloom with which I am familiar." His larger tree, set as a 1-year seedling in 1937, had reached about twenty feet tall in 1963. (Phil Savage measured it 37 feet tall in 1972.)

At about the same time, the tree grown as "*M. cylindrica*" at Windsor, England received an Award of Merit when shown to the Royal Horticultural Society in April, 1963. T. H. Findley, writing of it that year in the R.H.S. Journal, said, "the newcomer, *M. cylindrica*, should, when better known, be widely planted. Slightly larger in size of flower than *M. salicifolia* or *M. kobus*, this magnolia has a quality all its own." Hillier and Sons say they probably introduced "*cylindrica*" to Britain via the United States, but do not state original site of their clone.

Krossa mentioned that his "*M. cylindrica*," like *M. officinalis* var. *biloba*, had never been injured by frost or freezing. Similar hardiness was shown by University of Washington "*cylindrica*" grafts in Champaign County, Illinois in April 1972, at their first flowering, when swelling buds endured a sudden drop to 19 degrees F. The same freeze killed a majority of flower buds there on the common form of *M. denudata*. (Buds were killed on both in March, 1974, when 6 degrees followed 79 degrees.) In Sweden, Karl E. Flinck says of "*cylindrica*": "It is in my garden superior to *denudata* as it presents the flowers better. Absolutely hardy and bud hardy." He rates it among the "Ten Best" magnolias for Swedish culture, but doubts that it is authentic *M. cylindrica* Wilson.



Left to right: *M. kobus borealis*, *M. cylindrica* (so called) and *M. denudata*.

15 this  
the  
Lu Shan  
plant

So we have a wide consensus that the species, or variety or hybrid, distributed by the Lu-Shan Botanical Garden is exceptionally good and hardy. But what is it, in fact? Perhaps it is not even a member of Section Buergeria, to which *M. salicifolia* and the varied *M. kobus* varieties belong, although the three outermost tepals of its flowers are much reduced in size, translucent, and "sepal-like," as are those of the flowers of other species in that section. It could be either a botanically unrecognized new species, or alternatively, a hybrid between *denudata* and another species, most likely the true *M. cylindrica* Wilson.

✓

Different "*cylindrica*" trees grown at widely separated places from the Lu-Shan seeds seem rather similar to each other. Such similarity could be seen in a hybrid F1 population. And if the seed parent was, indeed, a real *M. cylindrica*, the uniform production of hybrid seeds could have occurred in 1936 because that tree was self-incompatible but was fertilized by pollen of a tree of *M. denudata* or another large-flowered species in the same garden. The known *M. denudata* clones in America are self-incompatible. Self-incompatibility seems to be prevalent also in *M. salicifolia*, judging by the frequency with which (in cultivation) it crosses naturally with the *M. kobus* group. If *M. cylindrica* Wilson is indeed most nearly like *M. salicifolia*, it could very well be self-incompatible, or partly so. If it is a diploid, as would be implied by membership in Section Buergeria, it could still cross with the hexaploid *denudata*. I have crossed *stellata* × *denudata*, and K. Wada long ago advertised a hybrid between *denudata* and *kobus*.)

That's a lot of "if's" for the hybrid explanation. Some of them will be proved or disproved by further study. Even without going back to Wang shan, we could get chromosome counts of the cultivated "*cylindrica*." We could try selfing and crossing with it, and see what pollinations give most seeds. These things will take time, but Phil Savage has made a start, with crosses on *denudata*, and with pollen from a good trade form of *M. × soulangiana*. At present, we can say that the "*cylindrica*" of gardens appears as close to *denudata* as to any species of the Section Buergeria, without assigning it either varietal or hybrid status, and let the botanists work with it toward a final determination.

Meanwhile, since Chinese relations with the U.S. are becoming more normal, another botanical expedition to Wang shan in Anhwei province is something to be anticipated in future years. With jet transport part of the way, we probably could get out some good magnolia material, along with many other ornamental genera, from the rich woody flora there.

*Manglietia fordiana* Oliver was another plant of the magnolia family found on Wang shan (at 550 meters, compared with the 1150 to 1400 meter elevations for *M. cylindrica*.) *Magnolia "parviflora"* (= *M. sieboldii*) was common in partially shaded ravines on Wang shan at 1400 m., and *M. officinalis* in bamboo forest at 1100 m. *Schisandra sphenanthera*, a trailing vine 5 m. long, flowers dark purple, occurred at 1500 m. Though *Schisandra* is no longer included in *Magnoliaceae*, this pretty vine would be one of many things from the Yellow Mountain, worth trying to introduce.

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The following is an interesting letter on the subject of *M. cylindrica* received by Joe McDaniel from Dr. Frank S. Santamour, Jr., Supervisory Research Geneticist at the U.S. National Arboretum.

Dear Joe:

Thanks for your letter of 22 March and attached material.

Enclosed you will find a reprint by a fellow named Santamour in which he stated that *Magnolia cylindrica* is a diploid with  $2n=38$  chromosomes. In view of what you have said, I wonder about this report.

The chromosome count was right! But in those days I was taking my taxonomy less seriously than now and relied on others for identification. Frankly, I cannot remember whether I took roots from cuttings or from the original plant for this count. If I took them from the original plant, and Hohman had grafted on *Kobus* - then the count is suspect. The plant did not flower during my time at the Morris.

However, if the Krossa plants have only 6 tepals\*, I cannot go along with a *Buergeria* X *Yulania* parentage. In a cross such as this, the male parent with 9 tepals (*denudata*?), would be hexaploid. Therefore, the hybrids would likely have more than 6 tepals. I must confess that we have not flowered any such crosses, so this reasoning is purely hypothetical. Perhaps you have had actual experience with such crosses.

Also, it is likely that such hybrids at the tetraploid level would be quite sterile. If Phil obtained good seed set on *denudata*, this would indicate fairly good pollen.

You and Phil are much better detectives than I am, so I'll leave it to you. Of course, there is a possibility that Wilson's original description was wrong or misapplied. Anyone who can call 'Diva' a variety of *denudata* is not infallible.

Sincerely,  
Frank

\*Editors Note:

Flowers on Krossas' plant have nine tepals, with the outer three tiny and tissue-thin.

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