

Acuminata × Campbellii in '78

by J. C. McDaniel

A call from member Karl Flinck prompts me to issue this challenge to Society members: Let's cross *Magnolia acuminata* × *M. campbellii* in 1978! There's a good chance the hybrids would thrive over much of the temperate zone where deciduous magnolias grow. The flowers would be novel and worthwhile.

The initial problem, one of logistics, is to get viable *campbellii* pollen to the receptive stigmas of *acuminata*. With the cooperation of a few or several members of AMS and their friends it can be done.

No one, so far as I know, has yet accomplished that cross. I tried it about ten years ago, using pollen mailed to me at Urbana, Illinois, from San Francisco, but the single seed harvested yielded an *acuminata* seedling. The supposition is that the *campbellii* pollen lost viability during transit or during the period of refrigerated storage required until *M. acuminata* flowers were ready to be pollinated.

Still I think the cross is altogether feasible. Here's the botanical relationship:

Both *M. acuminata* and *M. quinquepeta* (*M. liliflora*) are tetraploids (76 chromosomes per somatic cell) in Section *Tulipastrum* of Subgenus *Yulania*. They will intercross, at least with *acuminata* as seed parent. Both *acuminata* and *quinquepeta* have been successfully crossed with some species in the hexaploid (114 chromosomes) Section *Yulania*, Subgenus *Yulania*, to which *M. campbellii* belongs. Brooklyn Botanical Garden's No. 391 is *acuminata* × *heptapeta* (*denudata*). 'Caerhays Surprise' is *quinquepeta* × *campbellii* subsp. *mollicomata*, and Os Blumhart in New Zealand has made *quinquepeta* × *campbellii* crosses too. It does not necessarily follow that those species that will cross with the same other species will also cross with each other, but we have a warm indication that they are likely to do so with a little manipulation.

But flowers on the projected parent trees are separated by time and space. January-March is the flowering season for *M. campbellii* in the San Francisco Bay area, in Ireland, and in Cornwall. (Sir George Jessel's 'Betty Jessel' tree

in Kent flowers from late April into May.) *M. acuminata* is not known to produce fruit in the regions just named, but does so in April and May where native in much of the eastern U.S. and in extreme southern Ontario, in Canada. The closest cooperation of persons possibly as much as an ocean or close to a continent apart must be enlisted to accomplish the crosses in the coming year.

Nylon or wire mesh coverings would be good insurance to protect the precious crossed *acuminata* fruits from hungry birds and squirrels. I'll not go into details of seed harvest, storage and germination.

Hardiness of seedlings would remain to be tested, once hybrid seed are produced and germinated. The hardiness value could be expected to be intermediate between the parents. Again, by analogy with related hybrids, we can expect that *acuminata*—though it would contribute only 38 chromosomes to the projected hybrid, as compared to 57 from *campbellii*—would give earlier leaf-fall, greater resistance to midwinter cold, and slower start of growth in the spring.

Yellow flower color is another trait *acuminata*, as a seed parent, has given to its hybrids. For at least some of the *acuminata-campbellii* hybridizations I expect to make in 1978, the seed parents will be *M. acuminata* 'Golden Glow' and *M. acuminata* var. *subcordata* 'Miss Honeybee'. But all *acuminata* cones probably carry the yellow component, even if it is often masked by green in the tepals.

If we are permitted a choice in selecting *campbellii* pollen sources, the most desirable clones probably would be those which have exhibited relatively early maturity (subsp. *mollicomata* or its crosses with subsp. *campbellii*) or those with a later than usual flowering season, such as 'Betty Jessel' or 'Late Pink'. The *acuminata* parent would be expected to produce hybrids that flower at an earlier age than the some 20 years which is standard for subsp. *campbellii* in favorable locations. But if the *campbellii* pollen parent is one of those cultivars or forms that flower when

younger, or if it flowers later than the norm in spring, so much to the good. Beyond that, we'll want to test different color forms of *campbellii*, from 'Strybing White' to the very deep colored 'Lanarth', as pollen parents.

Before the hybrid seedlings reach the flowering stage, we'd recommend distributing scions to collaborators in different climatic regions for grafting on branches of established trees (*M. acuminata* or *M. × soulangiana*) to test their hardiness. If there is a good supply of seedlings some might be planted out soon in the climates where pure *campbellii* has failed to survive the winters in previous tests.

M. × veitchii, the best known hybrid of *M. campbellii*, was produced after several failures when Peter Veitch pollinated *M. heptapeta* × *M. campbellii* in England and raised two hybrid seedlings to maturity. *M. × veitchii* has been a good parent. It has figured in the introduction of *M. campbellii* in diluted form in the pedigree of several named and many unnamed Gresham hybrids, plus two as yet unnamed hybrids bred at the U.S. National Arboretum. *M. × veitchii* and selections from its fertile hybrids are other possibilities for productive crossing on *M. acuminata*. The fertile *M. × brooklynensis* hybrids, 'Woodsmen' and 'Evamaria', would be worth pollinating × *M. campbellii*, but these more complex hybrids would dilute the inheritance from *M. acuminata*.

It's also worth trying to cross *M. acuminata* × other species in Section *Yulania*. BBG No. 391 (see story page 21) illustrates the hardiness and beautiful flowers that can be obtained in *acuminata* × *heptapeta* hybrids. Dr. Frank Santamour at the U.S. National Arboretum has crossed *acuminata* × *sprengeri*, and others could repeat this cross. Some other combinations worth trying are crosses of *M. acuminata* as seed parent with *M. dawsoniana* and with *M. sargentiana* var. *robusta*. The latter species is slightly harder than *campbellii* and rivals it in beauty of flowers, according to some, and its flowers are better displayed for viewing; however, there are fewer trees of flowering age where it thrives in the western U.S.

One other 1978 crossing suggested by Karl Flink for members in the eastern U.S. is *M. virginiana* × *M. sieboldii*. He quotes Dr. Santamour as expressing the belief that such a



Magnolia quinquepeta × *M. sprengeri* 'Diva' at National Arboretum. (Photo by Dick Figlar)

cross is feasible with *virginiana* as the seed parent. The eastern part of the country would be the best place to try it because *virginiana* sets seed most reliably there. Karl has both species in his Swedish garden, but *virginiana* does not bear seed for him there and does so only rarely anywhere in western Europe. Karl does get fruiting on *M. sieboldii* and its close relative *M. wilsonii* in Sweden. I have *M. sieboldii* grafts beginning to flower on *M. virginiana* stocks in Urbana, Illinois, where they survived the hard winter of 1977. They should provide pollen for the cross.

M. acuminata × *M. campbellii* will be my highest priority, however, in crossing American × Asian magnolias in the coming year if I can line up pollen sources in California or elsewhere. All members who are interested are invited to cooperate. Write me if you will supply *campbellii* pollen from the West Coast or if you have a good *acuminata* tree or two on which to use it in season. *M. campbellii* is generally acclaimed to be the world's most beautiful deciduous magnolia, and *M. acuminata* is possibly the hardest. Let's try some cooperative matchmaking next spring to let the twain meet on as many breeding grounds as possible!