

Growing and hybridizing magnolias in southern Canada

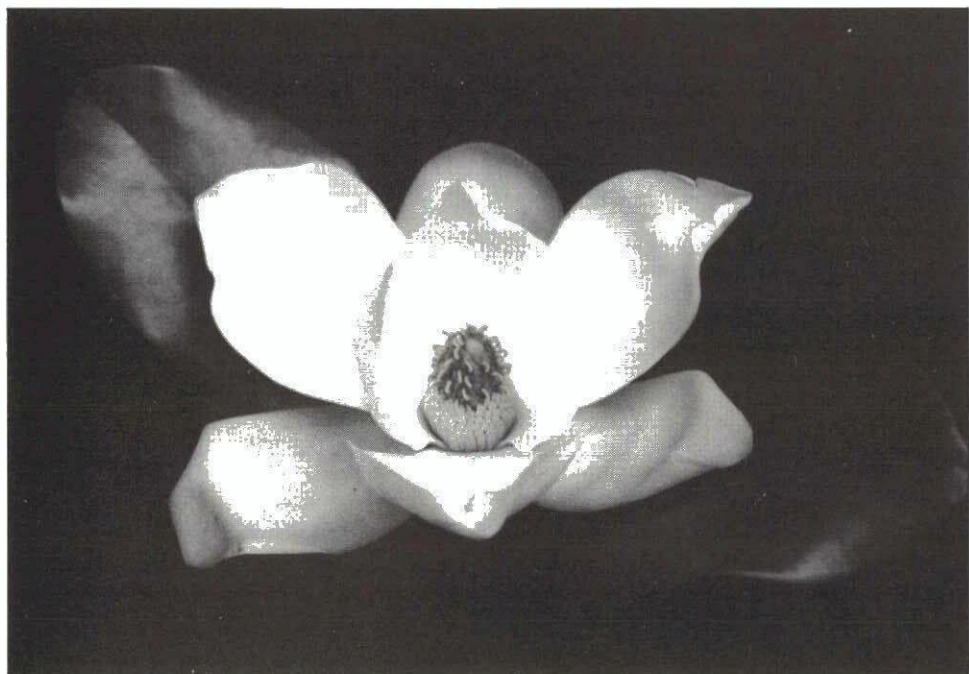
by MICHAEL J. BULA

As a young boy who hated the assigned chore of pulling weeds in his parents' garden, I found it expedient to learn about perennials which were tough and BIG enough that there was no place left for weeds to grow. A little encouragement from relatives and passers-by in those early days sparked an interest in gardening. I suspect my interests in plants are a little more encompassing at this state but, perhaps, no more noble since I continue to grow more plants per available square meter than most do in their entire yard. Thus few weeds still really do have a chance. Sometimes I feel like a modern day Noah with my yard being an ark of some of the rarer plants in the area.

Since we have a rather long non-growing season, my particular fascination with plants rests in the broadleaf evergreens and a few of the more interesting conifers such as weeping Nootkas and pines for bonsai. My yard contains a large collection of boxwood, rhododendrons, hollies (blue-green, American, English and Japanese), azaleas, cherry and mountain laurels, etc. My particular interest in magnolias was sparked by a drive to Florida. While passing through Atlanta, Georgia, at highway speeds, I spotted these huge pyramidal evergreen trees to

which ficus paled by comparison. I would have come to a screaming halt, but you know what it's like when surrounded by weary non-plant people with only the warm beaches on their mind....

Upon returning home and checking my Golden Guide *Trees of North America*, I found the trees to be none other than the famous Southern Magnolia. How these glossy-leaved evergreens would brighten up a winter's day once everything else had long lost their leaves, I thought. But alas, their distribution was nowhere near our area and their chances of survival during our long winters nil. Reading on in the same book—on the pages that now fall out—I became interested in *M. virginiana* as a grandiflora substitute. But even its distribution came nowhere near our borders, and I became discouraged. When I found out that a local nurseryman was selling the same and had a hardy, partly evergreen specimen, my spirits soared, only to be crushed again by the fact that he was sold out when I called. After many months of long distance telephone calls, I found an older tree in a wholesale nursery in Hamilton, a remnant from a much earlier special order from a plant enthusiast. Waiting for the fall to pick up



Magnolia grandiflora 'Edith Bogue,' hardy, evergreen, and blooming in southeastern Canada ~ 43° latitude. Climate modified by lake effect.

that tree made the summer seem endless—something which I guarantee that you will hear few teachers utter! Finally I picked up the beautiful tree (which took four men to lift) and dug too shallow a hole and planted it as such since I couldn't lift it out. Luckily it seems to thrive in its raised bed and the tree is well-established. That same month, when its many seed pods released those ruby capsules, pendant on silky threads, I realized that magnolias would be my new speciality. Its hardiness also taught me to understand the limitations of distribution maps with respect to choosing plant material and to take zone hardiness with a grain of salt. After all, osage orange trees grow perfectly well here despite the fact that they are indigenous to a very

limited area of Texas. Each garden has its own microclimates.

At that point, I started to do a lot of inquiring about the possibilities of acquiring seed of other species or magnolias. The name of the late Joe McDaniel came up more than once so I wrote to him and was signed up as a member of the Magnolia Society. The two greatest assets of the society were and still are the Seed Counter and the Journal. Imagine having access to the entire global gene pool of magnolias and getting professional advice in their propagation and culture just by writing a few letters! Most of my magnolias have their roots (sorry...) in this service and the officers and contributors are to be commended highly. What better way could there be to immortalize one's interests in

the genus *Magnolia* than to ensure their world-wide distribution, especially when their native habitats are being destroyed. The advantages of the genetic diversity of seedlings are not to be overlooked. Clones are predictable and nice but we all know their limitations, especially in disease considerations.

I quickly got over the brainwashing of the many who harped upon the messiness of *M. x soulangiana*, despite its beauty, and planted a few. After all, in this age of self-propelled lawnmowers which virtually vacuum the lawn while cutting it, just how much trouble could it be to clean up the glut of tepals after its gaudy performance? Additional purchases of *M. fraseri* and *M. stellata* added to my growing collection as did many seedlings courtesy of TMS. A couple of rooted cuttings of *M. grandiflora* 'Edith Bogue' from an arboretum offered some interesting patio plants, now over a meter tall. In fact, thanks to TMS and local garden centers, I can boast of a collection of magnolia species and varieties on my humble 21 meter by 35 meter (70 x 115') city lot larger than most individual collections in Canada. Look out if and when they all mature. I'll be growing a lot of hostas in their shade! Oh well, I guess I won't have to be personally concerned about too much exposure to ultraviolet radiation caused by holes in the ozone layer.

As with any plant collection, one becomes obsessed with obtaining as many different species, varieties and hybrids as are at least marginally hardy. My magnolia list includes: *kobus* (seedling 4m tall), *macro-*

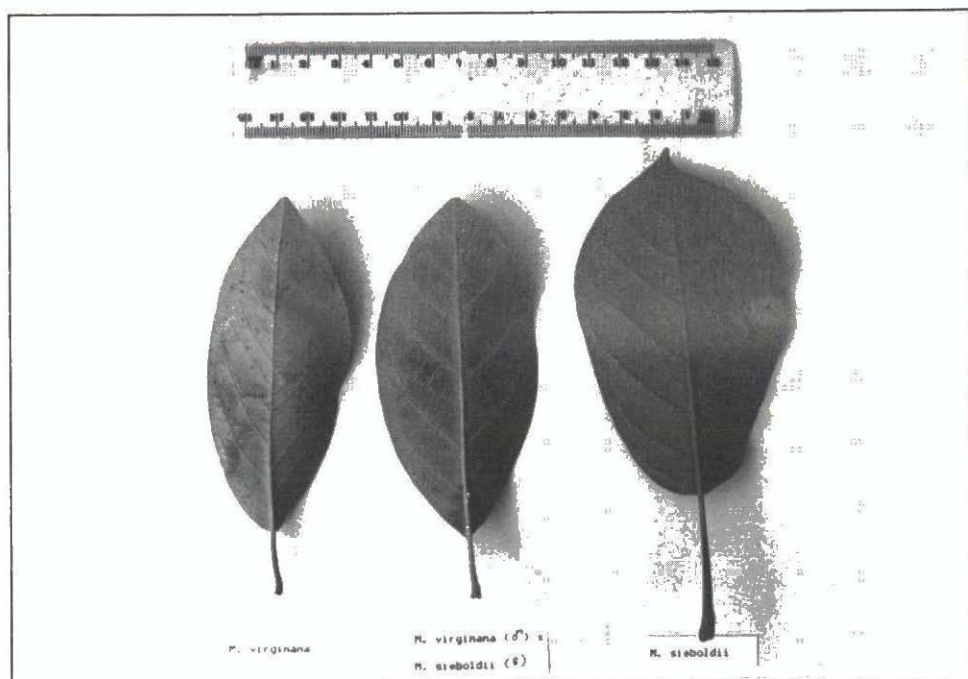
phylla (.7m), *macrophylla* subspecies *ashei* (2m), *tripetala* (3.5m), *virginiana* (spreading 3m), *loebneri* x 'Merrill' seedlings (3.5m), *stellata* 'Waterlily' (4m x 4m and incredible all year round), *fraseri* (4.5m), *salicifolia* (1.5m), *sieboldii* (2m), 'Betty,' 'Jane,' x *soulangiana* 'Lennei,' and an unlabelled deeper form of the same; and 1-3 year seedlings of *cylindrica*, *hypoleuca*, *hypoleuca* x *officinalis*, *sprengeri* 'Diva'; and seedlings of the aforementioned plants. My pride and joy lies in the realization of the previous dream of growing *M. grandiflora* seedlings (mostly 'Charles Dickens' heritage) which have survived 4-5 winters outside, have remained evergreen to different extents (depending on their location and exposure), and have even bloomed and set seed this past summer. To have them root hardy and have simply suckering stems of those incredible leaves was my only hope when I first planted out the 3 year old seedlings. The last few winters have been fairly mild overall but that quick cold snap last Christmas which hit even Pensacola, Florida, with -17°C didn't help ease them into winter well and browned them. Strong winds combined with cold temperatures really snap a lot of leaves off at the petioles. We had a couple of severe ice storms which weighed down the trees considerably and made me wonder how they fare as large trees in the South. Now if the winters continue to be mild for a few more years, the trunks will hopefully mature to the extent that they could survive a harder prolonged winter like the infamous "Blizzard of '77." Maybe the recent

"Greenhouse Effect" isn't so bad after all...sure would help us in zone 6B with minimum winter temperatures at -20°C (-4°F).

Once one gets such a diverse collection of magnolias going, one starts to appreciate the subtle and not-so-subtle differences between the plants in all aspects. I enjoy photographing the plants in all stages of growth, flowering, and seed production. One also becomes aware of the tremendous gene pool just begging for hybridizing (something which Nature usually discourages by isolation of the different species since most of the resultant crosses are non-productive or sterile). Not being terribly interested with the tedious and time-consuming nature of the isolation usually associated with hybridization experiments, I was not a likely choice to become involved in this procedure. However, I figured that the parents are sufficiently different so a less meticulous approach might suffice. I started by simply transferring pollen from one species to the stigmas of another species that chanced to be in bloom the same day. Observations during a couple of such crosses taught me that the anthers release their pollen on the second day that the flower is open, at the moment that they break away from the rest of the flower. I also noticed that the stigmas seemed most feathery and perhaps most receptive at the moment that the flowers opened on the first day and quickly retracted to the center of the flowers upon opening. Curiosity convinced me to gently peel a flower open an hour or so prior to opening and the very receptive-looking stigmas became

obvious. I concluded that the female part of the flower was most receptive prior to opening as a means of attempting to ensure the genetic reshuffling that cross-pollination might be able to offer...after all why else would plants go the the bother of sexual reproduction in the first place. From this point on, I proceeded to open flowers with the top end of the paint brush and pollinate with the bristles dipped into a plastic 35mm film canister full of stamens. To increase my opportunities, I collected anthers whenever they were available and saved them in open cases until a different species opened. I even closed a couple cases and froze the pollen. Besides greatly increasing my success ratio with hybridization, I also found that saving pollen allowed individual trees such as *ashei* to set even non-hybrid seed since the few flowers were not always able to be pollinated naturally when they presented themselves one at a time on the only plant in my yard. A simple masking tape label located below the pollinated flower completed the job until the seed was harvested, cleaned and cold-stratified in the fall.

The process described above worked very well and soon my magnolias were covered with tiny beige flags. Having always been impressed with the fact that the Seed Counter seeds were already germinating upon receipt and having read excellent articles in the *Journal* describing cold, moist stratification saved me from murdering the under-developed embryos: otherwise I would have simply stored the seed



Leaves from cross of Magnolia virginiana x Magnolia sieboldii, showing intermediate size and venation. Center leaf in lower photo is incorrectly labelled. Magnolia virginiana is the female (seed) parent and M. sieboldii is the pollen parent.



dry in the basement until spring with disastrous results. To keep track of the many different hybrids, I simply soak the seeds separately in water for a day or two to soften the red fruit then remove them and wash in detergent to remove any oils, and place them with a wet paper towel into pill bottles with the parentage printed on the outside. The bottles are stored in the refrigerator until the beginning of May, then opened in the kitchen for a couple of days and finally planted. A recent article in the *Journal* suggested using DEEP pots; I found this method vastly superior to shallow seed flats in that the roots went to the bottom of the pots without appreciable branching and the plants had less tendency to "damp off." I also prefer to place these pots outside on the first day that the plants emerge from the soil since they will not require a period of adjustment. I simply bring the pots in if there are any cool nights. Some of the seeds have a problem breaking free from the cotyledons and are actually strangled by them. When I pondered why my method of growing the seeds produced this artificial problem, I guessed that if the emerging seedlings were misted regularly, the moist membranes would be softer and it would be easier for the unfolding leaves to break out. This did work quite well and saved a great deal of seedlings from death by strangulation, a very common problem with *M. macrophylla*.

My first hybrid seedlings emerged in the spring of 1987 and five out of six damped off. Luckily, the only survivor of this *M.*

virginiana x *M. sieboldii* cross is still growing and about 1m tall. It hasn't flowered yet but the leaves are truly hybrid, being intermediate between the parents in size, shape, venation and color on both upper and lower sides of the leaves. I find the leaves are slightly glossy and of heavier substance than either parent. Unlike its father, the hybrid's leaves do not burn in full sun. If the plant ever blooms, the flowers might prove to be quite interesting, especially if they combine the delightful fragrances of the parents and the color of the *M. sieboldii* stamens.

My other hybrids from the next year were from the cross of *M. virginiana* x *M. tripetala*. The three hybrid plants have beautiful undulating leaves, intermediate between the parents in all characteristics. I know that this cross already exists by the name of *M. x thompsoniana*, and it may seem that I am re-inventing the wheel. This may be the case, but I cannot easily obtain plants of the clone, and, though the parents are the same, subtle differences exist even among my seedlings which might make them unique—you know, "same but different!" Think of all of the varieties of *soulangiana*. Besides, the feeling of creating a plant brings a whole new excitement to growing magnolias.

The summer of '89's attempted crosses showed little or no hybrid character upon growing this past summer. Regardless of that defeat, I continued hybridizing. I collected pollen from *M. liliflora* and tried a lot of crosses, most of which did not set fruit. Also many crosses were attempted on my plants of *tripetala*,

fraseri, *sieboldii*, and *virginiana*, and just when I was about to count my chickens, the vast majority of swelling ovaries were suddenly aborted. *Magnolia fraseri* set no fruit whatsoever (even with its own pollen), and *M. sieboldii* rejected close to 100% of all of its developing pods. It is interesting to note that *M. virginiana* would gladly accept *M. sieboldii* pollen and set fruit yet the opposite cross did not work. A big disappointment came the day that I tugged slightly on a branch of *M. tripetala* to attempt a cross on a flower slightly out of reach and the whole branch came down with some eight developing hybrid fruit pods. It seems that the branches of *M. tripetala* are most brittle at the time of flowering, since high winds at that time also ripped off a few branches and completely shattered all of the larger leaved magnolias.

Along with all of these disappointments came a few encouragements. This year my six year old *M. macrophylla* subs. *ashei* had seven blooms and set five pods, some of which are hopefully hybrids. The *grandiflora* plants also produced a total of seven blooms and five pods, two of which ripened before colder weather set in. Of course, they also produced pollen which was used in the listed crosses. All of a sudden the beauty of the flowers seems to take a second seat to the possibilities of hybridization. In my refrigerator at this time are the following attempted magnolia crosses:

grandiflora x *sieboldii*
ashei x *sieboldii*
tripetala x *sieboldii*

virginiana x *grandiflora* 'Edith Bogue'
virginiana x *ashei*
sieboldii x *tripetala*
virginiana x *tripetala*
virginiana x *fraseri*
sieboldii x *ashei*
sieboldii x *virginiana*
tripetala x *fraseri*
virginiana x *sieboldii*
ashei x *liliiflora* 'Nigra'
virginiana x *grandiflora*
ashei x *fraseri* / *virginiana*.

Next year I plan to continue along the same lines and, now that I have 'Betty' and 'Jane,' I will attempt hybrids with them. I hope the Seed Counter will have *M. liliiflora* 'Nigra' seeds so that I might grow a parent to cross-pollinate. Local trees of the same did not produce any seed despite close proximity to each other, heavy flowering and good pollinating conditions when in bloom. I also hope to obtain seeds of hardy small-leaved *grandiflora* which should provide less wind resistance during winter.

In summary, I hope that this description of how yet another amateur got started in magnolias and the direction in which he is proceeding proves interesting to TMS members and stimulates others to share with the Journal. I shall write brief *addenda* if any interesting results should happen. Thanks Ray Tessmer and Phelan Bright for your encouragement. 🌸

Mr. Bula gardens is Saint Catharines, Ontario, Canada, where he seems to have considerable success with his plants and his camera.