

are likely to remain moist for a longer period of time, and any danger of leaf burn in the sun is avoided.

5. My own practice has been to feed weekly, and last autumn we continued feeding into September, in the belief that this has a beneficial effect on root and bud formation for the following season. This is, however, purely guesswork, based on the performance of plants fed last year in autumn, when they grew away in 1977.

NOTE: In the U. S. Murphy's brand foliar feed probably won't be found in stores, but two brands of soluble fertilizer are marketed with similar formulas and uses--Rapid Gro and Peters'. Neither lists trace elements on its label, but separately packaged formulas or combinations of trace elements may be obtained in well stocked garden stores. Two caveats need mentioning: foliar feeding should not be regarded as a replacement or substitute for root feeding but as supplemental feeding; trace elements can be toxic to a plant when applied to it for, say, longer than six months, to which it should perhaps be added that soils in various areas may differ considerably in content of some elements and the requirement of different plants for a given element may vary.

A Marriage That Lasted

E. E. Leppik of the Plant Genetics and Germplasm Institute, U. S. Department of Agriculture (Beltsville, Maryland 20705) in 1976 published "Morphogenic Stagnation in the Evolution of Magnolia Flowers" (Phytomorphology 25 (4): 451-464). He agrees with numerous previous authors that Magnolias are largely pollinated by beetles. Magnolias and beetles have coexisted from the Upper Cretaceous period through 100 million years.

It is Leppik's thesis that Magnolia flowers have "retained their elementary haplomorph structure" as in earliest known fossils of the genus, because the beetles were efficient enough pollinating agents and the flowers were food sources for the beetles. Thus there has been "only moderate specialization among some present day species," contrasting with "the swift progress of flower types in the Leguminosae, Scrophulariaceae, Orchidaceae, and other modern (plant) families."

But the fragrant flowers of *M. grandiflora* are among those which attract the more modern hymenopterous insects, including honeybees. At Beltsville pollen collecting honeybees were the second most frequent visitors to opened *M. grandiflora* flowers during June and July 1973-75. "Such competition between Japanese beetles and honeybees continued through most of the flowering season and caused maximum set of fruits and seeds."

Of course neither *Apis mellifera* nor *Popilla japonica* was found in the Americas until historically quite recent times, so these two could not have played any part in most of the evolution of *M. grandiflora* in its native area. But there were other beetles, and for millions of years, other bees.