

## Flowers That Know No Season

The cold and snow finished both the camellias that choose this time to bloom in sheer defiance and the roses gamely hanging on way past their time. Grasses are elegantly frosted and red berries abound, but they really aren't flowers, are they?

Serendipitously a friend lent me a copy of "The Glass Flowers at Harvard" thinking I might enjoy writing about flowers that do not fade. Many of you may have visited the Harvard Museum of Natural History, one of the most complete natural history museums in the New England area. The Harvard University Herbaria with about 5.5 million specimens of plants and fungi is surely one of the most comprehensive collections in the world and along with several other diverse collections, bones to stones adding up to over 21 million objects.

The Botanical Museum dates back to 1858 when it was founded by Asa Gray and called the Museum of Vegetable Products, so you can see that what was important was useful plants, those eaten or used in medicine. As specimens accumulated it was realized that a dried, faded specimen of what was once a vibrant flower, did not do justice to its beauty, nor were the delicate parts of the original easy to study. In that period, the 1880s, wax and papier-mache were used but they did not last.

When the director of the Botanical Museum, Dr. Goodale, saw glass replicas of marine invertebrates in Harvard's museum of Comparative Zoology, he determined that the consummate skill that produced marine specimens should be channeled into botany. In 1886 Dr. Goodale traveled to Dresden, Germany, to the studios of Leopold and Rudolf Blaschka, and entreated those glass artists to provide a few glass plants. Their production of invertebrates was substantial and the father and son were not eager to expand their business. Over time the few became many and for over fifty years glass plants were carefully packed and shipped to Harvard, an art in itself!

These are not fantasy flowers, but exact replicas of all the parts of a flowering plant and the project developed over the years with the financial backing of the Ware family until the collection contained approximately 850 life-size models representing 780 species with over 4300 detailed anatomical sections. The Ware collection also includes a series of models showing the life history of fungi, bryophytes, and ferns. The younger Blaschka traveled extensively searching for plants: the models achieved an unparalleled artistic and scientific standard.

Although instituted primarily as a teaching tool, the glass flowers have become a magnet for thousands of people who love flowers and love art. The book was written by Dr. Richard Evans Schultes (1915-2001) director of the Botanical Museum, considered the father of modern ethnobotany and recipient of the gold medal from the Linnean Society. The co-author was William A. Davis (1916-1988) freelance illustrator and keeper of scientific exhibits at Harvard. Pictures were done by Hillel Burger, chief photographer Peabody Museum of Archeology and Ethnology, Harvard University.

The text is fascinating, replete with historical data you rarely find in books about growing plants. The photographs are astonishing. It must have been extremely difficult to catch the intricate detail of these fragile objects with a camera. Studying the pictures makes you wonder how the glass artists managed to duplicate the ruffled petals of baby orchids and you marvel to see the miniscule golden petal-less flowers on the seeds of the ashy willow.

Equally impressive are the large sprays of apple and peach blossoms and a native iris, where the spent blooms are shown in their papery fragility. When you study the pictures of the glass models, you forget you are looking at glass. If you have admired the blooms of the May flowering Mountain Laurel, *Kalmia latifolia*, you have probably noticed that each small flower in the cluster is like an upended parasol, with tiny ribs. According to the text accompanying the laurel, these flowers have a mechanism that explodes and sheds the pollen onto honey-seeking insects

Another plant, so familiar to us as butterfly weed or bloodflower, *Asclepias curassavica* also has a curious reproductive process. The bright orange flowers are “complex in their structure and function: the stamens and carpels are united into a complex organ called a gynostegium, and the pollen is usually united into masses called pollinia that are carried from one flower to the next on the legs of insects, transferred to the insect by an organ known as the translator.”

As well as our favorite tools, we must equip ourselves with a magnifying glass so that we can study the extraordinary parts of our ordinary plants.