

THE TREASURE OF AN HERBARIUM:  
THE BOTANIST'S REFERENCE LIBRARY

An herbarium is a collection of dried and pressed plants which have been mounted for the purpose of serving as a ready reference to basic information about plants. These mounted specimens are often referred to as "sheets."

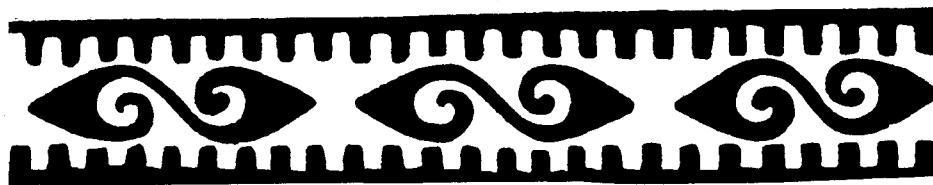
The term "herbarium" should not be confused with the word "herbal" which properly denotes a printed book that describes and illustrates plants. Herbals were produced between the 14th and mid-18th centuries. Early herbals focused on medicinal properties of plants, but through the centuries, as travel increased, the focus began to shift to new plants and to details about them. This change in focus necessitated careful observation of plants. By the middle of the 16th century, herbaria became realities in order to satisfy this interest.

The herbarium can be a teaching aid, even an absorbing hobby; but of greater scientific consequence, it serves as a reference library for plant research. Without herbaria (plural), the systematic study of plants would be nearly impossible. The herbarium constitutes the most essential tool for research in plant classification, distribution, ecology, and identification. The result of tens of thousands of hours of field and laboratory work and it represents a potentially similar savings of effort to a research botanist or field worker who uses its resources. An herbarium is the stuff of which most floristic and monographic works in botany are made.

Herbarium sheets are generally made in the following manner: The specimen is placed between alternating sheets of heavy blotting paper and corrugated cardboard and inserted into a wooden or metallic press. After it is properly dried the specimen is mounted on an 11-1/2" by 16-1/2" sheet of heavy paper with a high rag content. This size of mounting paper is standard in the United States. Other plants of the same kind, collected at the same time and place may be mounted on the same sheet. Specimens are mounted with gummed cloth tape. A label is prepared that identifies the plant and notes the locality and habitat in which it was collected, the date of collection, the collector's name, and any other pertinent data relating to the plant or its collection. Later an accession number is added to the label to reference the specimen within the herbarium collection.

Mounted specimens are arranged according to species, genus, and family, and then placed in folders of heavy paper. The folders are filed on shelves in airtight cabinets or cases. With the passage of time the flowers may fade but the mounted specimen can last indefinitely. Some have lasted over 300 years.

At the Phoenix Botanical Garden each specimen is accessioned in a book. Each entry contains the name of the collector, the collection date, and the name of the plant and other data available. This set of books housed in the Library of the Desert Botanical Garden reads like a botanical atlas of the world.



## HOW IT BEGAN: THE COMMITMENT TO THE CONCEPT OF A GARDEN HERBARIUM

The idea for an herbarium at the Desert Botanical Garden began to materialize in 1950 with the efforts of the Garden's Assistant Botanist, E. R. JIM BLAKELY. In a small room adjacent to the Webster Auditorium that now serves as the Education Office, Blakely assembled over 2000 herbarium specimens before he left Phoenix in 1956 to become Superintendent of the Santa Barbara Botanical Garden. The George B. Hinton collection made from 1932 to 1936 was donated to the Garden by Mrs. Walter Douglas in 1953. A collection of over 700 sheets collected by Mrs. Rose Collum of Rye, Arizona from 1930 to 1938 was given to the Garden by her estate in 1953.

The concept of a Garden herbarium received further impetus with the arrival in Phoenix of Mr. J. Harry Lehr. Mr. Lehr joined the Garden staff as Curator of Herbarium and began his duties in a small room filled with a random assortment of specimen sheets.

Despite the inadequacies of the herbarium quarters, there was earnest support from the Garden's Board of Trustees, the Director, W. Hubert Earle, and the staff, for the systematic cataloguing of Arizona flora and the flora of other regions, for appropriate shelter for the collection, and the enlargement of the Garden's botanical facility.

In May 1971, the Garden's Board of Trustees approved the building of an herbarium for the combined purpose of housing the Garden's rapidly growing collection of specimens, and for office space for the Research Botanist, Dr. Howard Scott Gentry who had agreed to continue his work on the genus Agave in the Garden's facility.

The invitation for bids for construction of the herbarium building opened October 12, 1971, and on October 20th the contract agreement was signed naming Lescher and Mahoney of Phoenix as architects, and Dean Coffman Contractors as builders.

Dean Coffman Contractors of Scottsdale also built the Garden's Gift shop building in 1960, and the Richter Memorial Library building in 1968.

Erecting the new herbarium building was complicated by the necessity of moving an existing workshop and storage building that occupied the site. These buildings were moved to their present location, adjacent to the Archer House where Dr. Gentry and his wife, Marie, were residing at the time, and where Dr. Gentry had set up a temporary office.

In January 1972 the Board of Trustees recommended that the new herbarium be dedicated to the memory of Lois Porter Earle who had passed away in 1968. A memorial fund was established in her name.

Lois Earle, the wife of Garden Director W. Hubert Earle, had taken a profound interest in the Garden and Garden activities. In 1957 she set up the Garden's first bookkeeping system. She loved the desert, hiking and exploring in it often.

The dedication of the Herbarium to Mrs. Earle's memory was a fitting tribute and met with the approval of the Members and all those friends of the Garden who had contributed to her memorial fund.

By March of 1972 the move into the new herbarium was in full swing.

On Sunday, April 16, 1972, at a formal dedication, the Lois Porter Earle Herbarium was opened.



"DES" A NATIONAL RESOURCE COLLECTION

During the past decade the nation has increased its awareness of the need for more accurate and complete information about plants.

Unfortunately public awareness about the importance of plants to mankind has far exceeded public support for the study of plants.

Indeed, this critical issue has to be faced in future decades.

Two years after its formal opening in 1972, the Lois Porter Earle Herbarium at the Desert Botanical Garden, "DES" as the name abbreviation appears in the national listing of herbaria, was designated as a National Resource Collection, one of only 105 herbaria in the nation to be so distinguished.

In THE REPORT TO THE NATIONAL SCIENCE FOUNDATION AND TO THE BOTANICAL SYSTEMATICS COLLECTION COMMUNITY, entitled "SYSTEMATIC BOTANY RESOURCES IN AMERICA, PART 1, compiled by the Advisory Committee for Systematic Resources in Botany, the listing of the 105 institutions were designated as NATIONAL RESOURCE COLLECTIONS. A total of 1,127 herbaria in the United States was surveyed, 623 surveys were analyzed, and of these 623 only 105 herbaria earned enough quality points to qualify for the award.

The Committee's rating system was based on the accumulation of quality points that were awarded for:

1. Total number of specimens
2. Number of type specimens
3. Number of volumes in associated library
4. Number of specimens loaned annually
5. Number of professional visitors
6. Garden facilities
7. Number of persons on the professional staff
8. Number of M. S. or M. A. and PH.D degrees directed by the staff in the last five years.
9. Number of staff papers in the last five years
10. Number of specimens exchanged annually
11. Associated electronic data processing capability
12. Number of specimens added annually.

To qualify as a National Resource Collection, institutions were required to score 12 or more points out of a total of 40 points. This survey included the largest and most active herbaria in the nation, affiliated with established institutions like the University of Illinois with its total number of specimens in excess of 4-1/2 million.

Of the four herbaria in the State of Arizona that were designated National Resource Collections, the Herbarium at the Desert Botanical Garden is unique in that it is the only one supported by a private, non-profit institution. The other herbaria designated as National Resource Collections in Arizona are located at the University of Arizona (224,000 specimens), Arizona State University (99,300 specimens), and Northern Arizona University (26,250 specimens)----all receive state support.

Housed in its tile roofed adobe building, the Herbarium collection at the Desert Botanical Garden has been built with the interest, determination and support of some very special people.

(The above stories about the Lois Porter Earle Herbarium at the Desert Botanical Garden are printed with the permission of the Desert Botanical Garden, their Saguaroland Bulletin, July 1980. The stories were handed to us through the interest and courtesy of Warner Dodd.)



#### A VISIT WITH A LEGEND

This is a tale of an opportunity which arose during the September 1980 California Cactus Run (one of the neat trips to the Huntington Botanical Garden Annual Plant Sale which the Desert Botanical Garden used to sponsor and which Earl and Martha Passwater had organized, scheduled, catered, and mother-henned).

These trips, now near legendary in themselves, always had interesting stops on the way to the sale at the Pasadena Convention Center. In 1980, we had stopped at the Grigsby Cactus Garden in Vista and then visited the Johnson wholesale cactus nursery in nearby Fallbrook through prior arrangements made by Genevieve Oppen.

It was there that we all had the opportunity to meet and shake hands with Harry Johnson. Harry, who created the famous 'Paramont Hybrids', had, in my view, somewhat of a legendary status. When you have never met people but have repeatedly seen things which are named after them, they tend to take on a slightly larger than life image. You know that they are ordinary people with family, friends, strengths, and weaknesses, but the nonetheless they have done or created something which is named after them and that seems special. And that's the reason for the title.

It had been emphasized to us travellers that Johnson's was strictly a wholesale installation. Accordingly, there was no "sales area", few plants had identifying tags, nothing had price marked, and none of the nursery personnel were mother-henning us. I saw that this would lead to much frustration and, noting that no one was even talking to Harry Johnson, decided to visit with him if he were willing. (Joan and our daughter would take care of the family interests in plant acquisitions.)

Harry turned out to be agreeable to sustained conversation, so I spent the most of the couple of hours of our visit wandering around and talking with him. After nine years, many details have slipped from me, but I recall vividly my feeling that he had led a very interesting life. About 80, Harry was a gracious, tall, white-haired gentleman with a lot of interesting memories.

I remarked on the beauty and fame of the 'Paramont Hybrids'. Harry said that he had moved the operation from Paramount (then a suburb of Los Angeles; probably not even a named neighborhood now) when the air started getting too bad (early 50's, I think). He noted that a recent visit had confirmed that hardly any plants could grow there now.

I mentioned how striking I thought the plant flats were with the incredibly precise placement of each plant on the corner of a square. Harry showed me the frames with projecting nails which were used to mark the smoothed soil in the flats where plants were to be placed. The frames varied from about 25 to 100 plants per flat.

I admired the stock plants as we walked about. (Would you believe a *Matucana myriacantha* with stems 10 to 16 inches long?) Harry mentioned the name of the Hispanic lady who checked the stock plants every morning and brought to him any ripe seeds she found.

Our strolling led eventually to the plantings in front of the nursery. I admired the handsome blue, ceroid cactus which towered to 10 or 12 feet. Harry remarked that he and Curt Backeberg had collected them during an expedition to Peru and he thought that Backeberg had later determined that they were a new species. (They may have been *Azureocereus hertlingianus*, although I don't remember them being that turberculate.) He added that the place in Peru had been in a seven-year drought and that even the large columnar cactus were dying, but that the *bougainvillea* were still green and had spines like iron.

I commented on the fierce spination of the *Ferrocactus rectispinus* specimens (central spines up to 8 inches long or so). Harry agreed that they were impressive and remarked that you couldn't get many of them in the back of a pickup truck.

I don't remember many more particulars of our conversation. I do remember remarking, after Harry mentioned that he had worked on a US Department of Agriculture avocado plantation in Guatemala when he was 18, that he had succeeded far better in following up on the things that interested him than most folks, including me.

I said goodbye to Harry and thanked him for the opportunity to visit when time came to reboard the bus. He said something pleasant about it and we shook hands.

As I said earlier, a most pleasant, interesting man.

-- Stan Skirvin



### NATURE'S CURIOSITY SHOP

Finding little-known, backyard succulent growers in Arizona and California has almost become a hobby in itself. It's a great way to meet fellow growers and often discover that hard-to-find treasure on your wish list. (I assume everyone has one-made from attending succulent shows or seeing other collections at botanical gardens, or visiting other collectors.) I never leave home without mine. It may take years but eventually I find a source for a plant not usually available. It was on one of these searches that I discovered Nature's Curiosity Shop in Oceanside, California. What an amazing place for a plant-lover to discover. The owner specializes in variegated plants. Most of the succulents are grown in several green houses located in the backyard of his home. The front and back yards are landscaped in mostly variegated plants and trees (even a variegated pine tree). Much of the backyard is filled with plants in one gallon containers but there is a nice desert section.

To see a water garden containing variegated cat tail with long graceful leaves striped with cream and white with even the tails variegated (*Typha Sp.*) growing next to banded bulrush (*Scirpus tabernaemontani zabrina*) and three varieties of variegated papyrus (*Cyperus*) is quite a treat for the senses.. Mounds of mondo grass, the leaves splashed with yellow and amaryllas, with dark green leaves and pure white lines down the center of each catch the eye. Seven

varieties of bamboo, with that many types of variegation are available to the buyer.

I realize this is for a group that is mainly interested in collecting succulents, but it is fascinating to find someone who has focused so specifically in his interest in plants.

Variegation does add a dash of color to a dull landscape or a bench of drab green cactus and succulents. I can find no sure evidence as to why a normal population of plants occasionally produce a variegate, but it occurs in almost all plant families, including many fine cactus and succulents. These often become collectibles and sought after by those looking for the unusual. Nature's Curiosity Shop deals in the unusual with a catalogue that includes more than a dozen gasterias, a long list of haworthias, many agaves, aloes, cotyledons, crassulas, gastraleas, euphorbias, kalanchoes, and senecios along with a number of non-succulent variegates. Many more plants are available there, that are not listed.

If you're planning a trip to the coast this is just one of many interesting growers to visit.

Good hunting! Bud Terrell.



IN MEMORIUM: LEWIS "LEW" STEICHMAN passed away November 22, 1989. He was one of the founders of the Central Arizona Cactus and Succulent Society, a generous friend, an ardent cactophile. We will miss him.



ITHACA

When you start on your journey to Ithaca,  
then pray that the road is long,  
full of adventure, full of knowledge.  
Do not fear the Lestrygonians  
and the Cyclopes and the angry Poseidon.  
You will never meet such as these on your path,  
if your thoughts remain lofty, if a fine  
emotion touches your body and your spirit.  
You will never meet the Lestrygonians,  
the Cyclopes and the fierce Poseidon,  
if you do not carry them within your soul,  
if your soul does not raise them up before you.

Then pray that the road is long.  
That the summer mornings are many,  
that you will enter ports seen for the first time  
with such pleasure, with such joy!  
Stop at Phoenician markets,  
and purchase fine merchandise,  
mother-of-pearl and corals, amber and ebony,  
and pleasurable perfumes of all kinds,  
buy as many pleasurable perfumes as you can,  
visit hosts of Egyptian cities,  
to learn and learn from those who have knowledge.

Always keep Ithaca fixed in your mind.  
To arrive there is your ultimate goal.  
But do not hurry the voyage at all.  
It is better to let it last for long years;  
and even to anchor at the isle when you are old,  
rich with all that you have gained on the way,  
not expecting that Ithaca will offer you riches.

Ithaca has given you the beautiful voyage.  
Without her you would never have taken the road.  
But she has nothing more to give you.

And if you find her poor, Ithaca has not defrauded you.  
With the great wisdom you have gained, with so much experience,  
you must surely have understood by then what Ithacas mean.

--C. P. Cavafy, translated from the Greek by Rae Dalven,  
The Complete Poems of Cavafy