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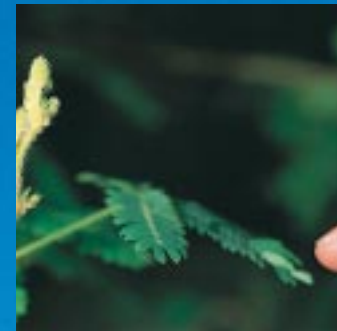
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A Leafy Library

“This plant uses hydraulics,” says Tim Metcalf, touching a frond of the

tiny-leaved mimosa. The leaves instantly close, recoiling from the intrusion. “It’s not like Venus flytraps, which have to grow back open and can do this only about five times during their life.” Metcalf, a UC Davis alumnus, is curator of the campus Botanical Conservatory; today he is also our guide on a tour of the African desert, the tropics and a fern gully—places usually continents apart but all found within feet of each other at the main greenhouse of the UC Davis Botanical Conservatory.

Step into the main hallway of the greenhouse where the walls are alive. Mounted on all sides are pieces of bark sprouting epiphytes—plants that grow on other plants, receiving nutrients from the rain, air and falling debris. They are part of a rich 700-species collection. To create these hanging wonders, interns collect pieces of oak bark when the trees are trimmed on campus and strap tiny plants on them. Once they take root, some grow enormous, like the staghorn ferns: large mounds with long, thick, ribbon-like spore-covered leaves hanging down. But the epiphytes are just a small part of the greenhouse’s collection.

The conservatory serves as resource for departments throughout campus for teaching and research on projects ranging from studies of entire species to individual cells. Plants such as the filmy ferns, with tissue one cell-layer thick, and *Peperomia metallica*, with its extremely large

1. Tim Metcalf behind a king fern; *Angiopteris evecta*. 2. Grafted moon cactus; *Gymnocalycium mihanovichii* var. *friedrichii* ‘Rubra.’ 3. Cone plant; *Conophytum lithopsoides* ssp. *koubergensis*. 4. Candy-stripe moth orchid; *Phalaenopsis* hybrid. 5. Living stone; *Lithops bromfieldii* var. *insularis*. 6. Base of shield leaf of a staghorn fern; *Platycerium superbum*. 7. Sensitive plant closing to the touch; *Mimosa pudica*.

PHOTOGRAPHY:
NEIL MICHEL AND LUIS GALVEZ/AXIOM



Left: Window plant held up to the light; *Fenestraria aurantica*.
Right: Bottle-bottom fig; *Dorstenia gigas*.
Below: Carrion or starfish flower; *Stapelia sp.*



chloroplasts, are particularly easy for researchers to study. The greenhouse also serves as a repository of “voucher specimens” contributed by UC Davis researchers who may need to use the specimen later and of rare plants given to the conservatory by plant collectors for safe keeping. But the primary goal of the conservatory is education; it’s a lending library of plants for class study. And if the plants can’t go to the class, the classes come to them. College biology students from UC Davis, Redding, San Jose, Sacramento and elsewhere file through each quarter, as do younger students. Over 600 elementary and high school students toured the conservatory last year.

They, too, begin their tour with the explosion of plants in the main hallway and work their way from world to world, room to room. The second door on the left opens to the carnivorous plants, one of the most popular collections in the greenhouse. Of perhaps 550 species of carnivorous plants in the world, more than 70 can be found at the conservatory. Some are small, harmless-looking plants; others are more threatening, like the *Nepenthes* with

its ponderous cup-shaped leaves that have been known to digest mice.

“Mythologically, ‘nepenthe’ is a draught given by the gods to allay suffering,” says Metcalf. “There is something in these plants that actually puts the insect to sleep as it struggles. When these hang down from trees, things fall in, mainly bugs, but the leaves are tough enough so that if something small and helpless tumbles in, it will drown.”

Across the hall is the desert room where the extraordinarily adapted succulents reside. The collection includes plants like the “living stones,” small, smooth, rock-shaped organisms growing out of a pot full of pebbles. Next to them are the window plants, clusters of green, crayon-thick rods, Metcalf cuts one off and holds it up to the light to demonstrate that the top, the “window,” is transparent, providing the plant

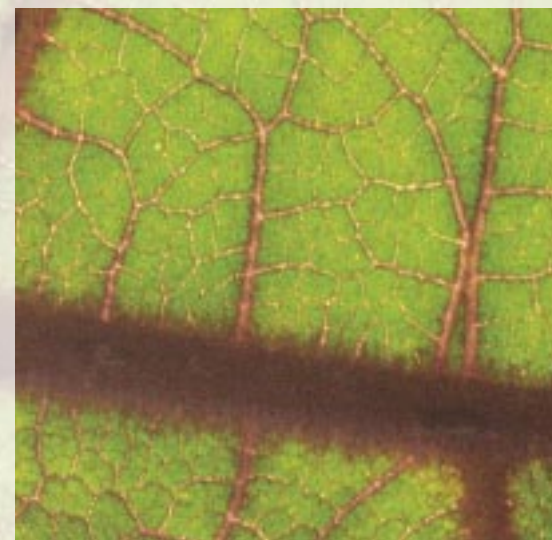
with the maximum amount of light it needs for survival. And tucked away in a far corner are the Dr. Suess-looking cucumber tree and a bottle-bottom fig. These trees are perhaps Metcalf’s favorites—not only because the fig was the subject of his dissertation, but also because, with the exception of a very few siblings and recently produced progeny, these small and wizened-looking trees are found outside of this greenhouse only on their native island of Socotra.

Metcalf became fascinated with the fig when he was a student working at the conservatory greenhouse. A math major who graduated in 1970, Metcalf warns, “Be careful what you do for a work-study job.” After leaving Davis for one year, he returned to work full time at the greenhouse. Metcalf learned as he went and started taking botany classes; he completed his master’s in environmental horticulture in 1980.

Though Metcalf takes watchful care of the bottle-bottom fig, he is not one to play



Above: *Dracula* orchid; *Dracula bella*.
Above right: *Crown of thorns*; *Euphorbia milii* var. *splendens* forma *lutea*.
Below: Close-up of a begonia leaf; *Begonia maddougallii*.



Above: *Vegetable sheep*, related to pineapple; *Abromeitiella brevifolia*.
Left: *Tropical pitcher plant*; *Nepenthes x mixta*

Building, will be twice the size of the existing facility, and be designed to better display the collection for the public.

It’s a challenge that Metcalf looks forward to and that will undoubtedly be an opportunity for the training of many more work-study students and interns who help keep it all running. Metcalf and two other staff currently manage 19 greenhouses on campus. The botanical conservatory has about 10 volunteers each quarter, including graduate students, members of the community and other students. They also have an internship program for UC Davis students. Says Metcalf, “All I ask is that they have an interest in plants and are willing to get dirty.”

The public is welcome to tour the main greenhouse Monday through Friday, 8 a.m.–5 p.m. It is located just north of Storer Hall.

Tooth brush orchid; *Dendrobium secundum*.

