

Botanical wonders

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A rare and exotic group of plant anatomy slides once destined for the Dumpster will soon be available via an online digital archive, giving botanists, scientists, plant lovers, and the curious access to a collection few knew existed.



Careful inspection: Assistant professor of biology Barbara Whitlock, left, and UM student Megan Morris examine two of the microscope slides from the Swingle Plant Anatomy Collection.

The brown, 1940s-era wooden cabinet looks drastically out of place next to the modern microscopes and other high-tech gizmos in Barbara Whitlock's lab. But old mixed with new doesn't seem to bother this University of Miami biologist. She's most concerned with the cabinet's contents.

Inside of it is a fabulous collection of thousands of plant anatomy microscope slides. Mounted with microscopically thin sections of rare and exotic leaves, stems, and flower buds from all over the world, they are as old as the cabinet that houses them. Whitlock has kept the slides in her lab for the past three years. Before that, they were tucked away in a hallway corner of UM's Cox Science Center—probably since the building opened.

Now, after going unnoticed for several years, many of the slides will soon be available on a University of Miami Libraries online digital database for all to see.

When it goes live in October, the Walter Tennyson Swingle Plant Anatomy Collection will include hundreds of images of the cellular structures of citrus and other flowering plants from destinations as near as Miami and as far-flung as the Congo, the Philippines, New Caledonia, and China.

MASSIVE STOREHOUSE

In all, some 26,000 slides, each containing two to 70 cross-sections of specimens of citrus or citrus relatives in the Rutaceae family, are included in the Swingle collection. But Whitlock and her team of students digitized only the most important and interesting samples.

"Flower buds were the most fascinating ones, and historically, that's where taxonomists see the

most interesting variations,” she says. “But we tried to include good representative images for each species.”

The oldest specimen in the collection: a cross section of a plant cultivated in 1769.



Lab work: Student Megan Morris projects an image of one of the Swingle microscope slides onto a computer screen for careful analysis.

Swingle, a botanist who retired from the U.S. Department of Agriculture in 1941 and came to work for UM as a researcher, created the slides with plant samples given to him by friends and collected from museums and during his travels around the world. He used a mechanical tissue slicer called a microtome to make the super-thin sections.

He died in 1952. But his slides and the extensive catalog describing them remained at the University, stored at the school’s old botany building and then moved to Cox, where they languished for decades, ignored and forgotten in their brown wooden cabinet, until one day Whitlock opened it, discovering the rich storehouse within.

“It’s our department manager’s job to clear old, unwanted equipment and supplies from the hallways to comply with the fire marshal’s directives,” Whitlock explains. “She asked me to check out the cabinet and see if it was worth saving. The alternative was that it was going to be tossed. So I opened it, and knew immediately that it was something important. There was no way this was going to the trash.”

She wheeled the cabinet into her lab, where she and some of her students spent weeks going through the collection, examining the slides under a microscope and matching their identifying code numbers to those from the catalog that accompanied them.

FAIRCHILD CONNECTION

Whitlock also used that time to learn more about Swingle, discovering that the Pennsylvania-born botanist, who earned his college degree at the age of 19, had become close friends with David G. Fairchild, founder of Coral Gables’ Fairchild Tropical Botanic Garden and The Kampong in Coconut Grove.



A microscopic view: Some of the slides in the Swingle collection contain several cross sections of the cellular structure of plant specimens.

"Citrus was [Swingle's] expertise," Whitlock says. "He worked in Florida for several years, [conducting a survey of citrus growing in the state]. He was particularly intrigued by all the different wild species that are related to citrus. He thought they had a lot of potential for breeding new plants."

An evolutionary and tropical biologist who studies the wildflowers called gentians as well as plants related to cacao (chocolate), Whitlock hopes to use the Swingle collection to conduct future research.

For now, it is the launch of the online Swingle collection that has her excited. She and three of her students are in the final phases of completing the project, made possible by a Digital Library Fellowship grant from UM Libraries.

UM LIBRARIES PLAYS A MAJOR ROLE









With that grant, one of three awarded to UM faculty members last year, the Department of Biology purchased a digital camera that Whitlock attached to a microscope, allowing the three students to take the highly detailed images of the slides. Working two to three days a week for an entire semester, the students, whose stipends were supported by the grant, digitized some 3,000 slides from the collection.

UM Libraries also provided cataloging and Web technology support. "Biologists classify using the taxonomic system, and as librarians, we seek to enhance resource discovery using both innovative and traditional practices," says Anthony D. Smith, director of digital initiatives for UM Libraries. "We designed a Web-based cataloging tool so that each image could be described similarly to the way we describe other library resources. We've provided enhanced access with common names [of plants] and subject terms so that [the collection] might potentially reach a broader audience of users."

Says Dean and University Librarian William D. Walker: "Research libraries are now in the business of creating new information resources that support discovery and learning. UM's libraries are now using new media to open up access to hidden collections such as the Swingle slide archive, which represents a powerful learning tool."

Smith and his digital initiatives team, which worked closely with Whitlock on the project, says UM Libraries has plans to contribute some of the digitized Swingle collection images to the ambitious Global Biodiversity Information Facility, a massive scientific effort among countries that gives users throughout the world online access to vast quantities of biodiversity data.

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