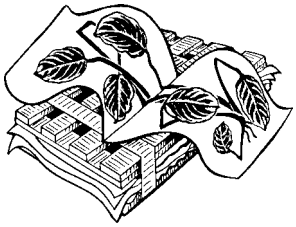
Department of Botany and the U.S. National Herbarium



The Plant Press

National Museum of Natural History
Smithsonian Institution

New Series - Vol. 1 - No. 4 July - August 1998

New Compactors Provide Needed Space

Each year some 25 thousand specimens are accessioned into the existing 4.5 million collections of the Smithsonian's National Herbarium. Storage space in the herbarium is already at a premium—new specimens fill approximately 20 new cabinets each year—a serious concern for one of the world's largest herbaria, whose mandate includes acting as a repository for plant collections throughout the United States and the world.

This year, collection space in about one tenth of the herbarium was increased by approximately one third by the installation of the first phase of compactors. "This is the most important thing to happen to our collections since they were first formed 150 years ago, second only to moving them from the Castle to this location," said John Kress, department chairman and curator.

Compactors provide additional space by reducing the number of aisles that would otherwise take up herbarium space. Existing storage cabinets are loaded onto wheeled carriages, which move side-to-side on steel tracks. The rows of cabinets rest close to one another when not in use and can be accessed by pushing a button to open an aisle. Two aisles out of a possible seven can be accessed at any one time.

The need for additional space has been a departmental concern since 1985, when limitations to long-term collection storage prompted a preliminary study of the problem. At that time, it was thought that the floors could not withstand the weight of compactors and additional specimens and cabinets, and thoughts of internal expansion were shelved. Curator Warren Wagner resurrected the issue as department chairman in 1995. "Over the last decade or so, not only were we out of storage space, but we were continually eliminating work space in the herbarium by taking half-high cases [on which specimens could be examined or sorted] and replacing them with full-high cases," Wagner said. He appointed a working group to investigate the issue.

One possible solution involved splitting the collections by transferring a portion of them to a satellite facility, the Museum Support Center, in Suitland, Maryland. But, as David Lellinger, a curator and member of the working group explained, "What we found out when we were thinking about the various possibilities of splitting the collection is that no split would yield a significant amount of expansion to make it worthwhile. There was nothing to do that was at all logical to alleviate the crowding except to get more space."

Internal expansion involved major funding concerns that still remain with the department. The Department of Botany pieced together a total of $460 thousand. A Smithsonian research equipment request for $140 thousand provided initial funding to start this first phase of compactors, and the remainder was obtained from the director's office and a significant amount of Botany trust funds. This was enough to install two full compactor bays, which will be completed in July 1998. A third bay will be installed within a year.

Prior to construction, several issues surfaced for Lellinger, Linda Hollenberg, Deborah Bell, and Wagner, the core working group. For example, the low ceilings made it impossible to use standard lighting above the aisles, so Lellinger designed special low-profile lights to attach to the cabinets. Asbestos was known to occur in the floor tiles and mastic that had to be drilled to anchor the compactor tracks; this required special drilling techniques to prevent release of the fibers into the environment. The sprinkler system had to be rebuilt to work effectively with the compactors. There were clearance problems with electrical conduit and ductwork. During construction, changes had to be made in the design and materials used in the raised floor between the compactor tracks for fire safety and differences in cabinet heights caused problems with installing the lights. Each problem added more money, time, and research than originally planned.

"We were fortunate," said Wagner. "We had a group of people who could and were willing to plow through each one of these issues until we got to the best possible solution. It's certainly not what they were hired or trained to do. If we didn't have the knowledge, ability, and ingenuity in-house, we would have had to hire out, which would have cost even more and taken even more time." He added that the National Herbarium is one of the last major United States herbaria to implement a compactor system.

Despite all the work and the rewards, the project is far from over. The remaining collections are still tightly compressed in storage cabinets. "When we say these compactors are going to give

Continued on page 6

New Faces

Linda Prince joined the department on June 1 in a post-doctoral position working with **John Kress**. Linda conducted her dissertation research at the University of North Carolina at Chapel Hill investigating subfamilial relationships in the family Theaceae. For her Master's Thesis, she worked on the family Cannaceae in the Zingiberales. While in the department, she will collaborate with Kress on investigations of the molecular systematics of the Zingiberales, primarily the generic relationships in the Zingiberaceae and the Marantaceae.

Mariah Steinwinter, a graduate of the Sidwell Friends School in Washington, DC, worked with **Alice Tangerini** to assemble and organize all of the botany illustrations into new cabinets. Mariah also helped with the database and illustration inventory as part of her month's volunteer work in the department as a NMNH intern.

Lisa Tholen is a new volunteer working with **Jane Villa-Lobos** and **Rusty Russell** on the plant images project. She is adding keywords and conservation status to the collection of over 3,600 plant images, many of which are U. S. endangered plants. Lisa is a junior at Fort Hays State University (Kansas) majoring in biodiversity, with an emphasis in botany.

The Research Training Program interns arrived on May 23 and will be working in the department for 10 weeks. **Allison Wack** is working with **Stan Shetler**. She is from Clarksburg, Maryland, and has just finished her junior year at Randolph-Macon Women's College in Lynchburg, Virginia. Her project is "A century of change in the flora and vegetation of an urban area-Arlington County, Virginia." She will look at the loss of habitat between 1900 and the present, check on the status of selected species known to occur in Arlington at the beginning of the century, and sample for new introductions. **David Taylor**, from Sam Houston State University, is working with **Harold Robinson** on "An examination of specific relationships within the genus *Pitcairnia* L'Heritier sensu L. B. Smith (Bromeliaceae)." This will be an initial survey of some of the characteristics of the genus *Pitcairnia* (ca. 270 species), emphasizing the seed characters that have been used by some authors to distinguish a segregate genus *Pepinia*. This is an attempt to justify a bias of Robinson against the generic value of *Pepinia*, based on observations of the West Indian types of the genera and an anatomically distinct group from the Guayana region. **Thinley Namgyel**, originally from Bhutan and currently a senior at the University of Wisconsin, Madison, is working with **John Kress**. He will be investigating the systematics and phylogeny of the genus *Cautleya*, a member of the Zingiberaceae. **Deokie (Jackie) Arjoon**, a graduate of the University of Guyana, Georgetown, is working with **Vicki Funk** and Richard Vari (Department of Vertebrate Zoology), on a comprehensive analysis of the fish biodiversity in Guyana.

The Plant Press

New Series - Vol. 1 - No. 4

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Visitors

Lisa W. Huckell, Maxwell Museum of Anthropology, University of New Mexico, Albuquerque; bibliography of seed dimorphism (May 8-23).

Vassiliki (Betty) Smocovitis, University of Florida at Gainesville (Department of History); history of World War II *Cinchona* expeditions (May 21).

Basil Stergios, UNELLEZ-Guanare, Edo. Portuguesa, Venezuela (PORT); Flora de Guaramacal (June 1-5).

George Proctor, formerly University of Puerto Rico (UPR); Monocots of the Caribbean (May 1998-June 1999).

Carlyle Luer, Missouri Botanical Garden (MO); Orchidaceae (June 15-18).

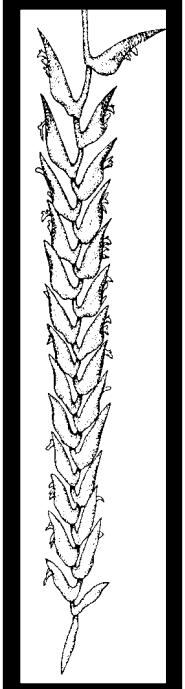
Santiago Diaz P., National Herbarium, Bogotá, Colombia (COL): presented a seminar on "Colombia, a Botanical Expedition." He was in Washington, DC in conjunction with the exhibit at the National Zoo on the paintings from the Mutis Expedition to Colombia in the early 19th century (June 15).

Abdulrahman Yusuf, National Museums of Kenya, Nairobi; Data management (June 15-July 15).

Steve Ginzbarg, University of Alabama (UNA); Euphorbiaceae, *Croton* (June 24-25).

Hugh Glen, National Botanical Institute, Pretoria, South Africa (PRE); Avicenniaceae, Cactaceae (June 29-July 17).

Chair With A View — W. John Kress



The Department of Botany must, by necessity, compact our collections in order to expand our mission. We are expanding even though we are not acquiring a single square foot of additional space. In this expansion, we will be better equipped to continue our dual mission of conducting plant systematic research while utilizing and maintaining our holdings of 4.5 million plant specimens. This vast collection has been developed over the last 150 years essentially since the first specimens from the Wilkes Expedition were given to the Smithsonian. The collections, originally housed in the Smithsonian Castle, were moved to their current location on the fourth and fifth floors of the West Wing of the National Museum of Natural History in 1965. And now, after 33 years, the collections are moving again, but not to a new home this time. Instead, the herbarium cases and the specimens they hold are moving onto the tracks of a modern, state-of-the-art compactor system that will allow an eventual 40 percent growth of our collections capabilities simply by making better use of the current space we have.

This issue of *The Plant Press* features news on the first phase of the installation of the compactor system in the department. Check the front page for details on how we are doing it and what will be done. Dave Lellinger, Warren Wagner, Debbie Bell, Linda Hollenberg and their team deserve great credit for moving this project forward. I congratulate them. As we celebrate the completion of Compactorization Phase I, perhaps it is appropriate to review our reasons for developing and maintaining this collection in the first place.

Why do we have plant collections? What are they for? How do we use them? I recognize two fundamental answers to these questions: 1) to attain a basic understanding of the diversity of plant life on the planet (referred to as "pure science"); and 2) to improve our everyday lives through the utilization of nature (often called "applied science"). Collections are an organized and manageable representation of the plant world. As our collections grow, so does our knowledge of the botanical world. Collections therefore are the basic reference library of the planet's biota and constitute a concentrated, synoptic, distilled guide to the earth's plant taxa currently known to science.

With respect to the applied uses of collections, land managers and conservationists recognize that the first step to the wise utilization and management of the environment is to conduct an inventory of usable natural resources, especially the plant resources. Our collections are essentially this global inventory, with an emphasis on the neotropics and the Pacific region. We are also widening our scope of techniques for extracting information from the specimens, which in some cases allow us to track ecosystem and environmental change.

Collections are also the universal link between species and the names we have applied to them. Without unambiguous names and correct identifications, the value of plants for economic and social use by humankind decreases rapidly. Collections housed in our herbarium make it possible to find useful plants in nature, identify them, and determine which of their relatives may be even more effective for some agricultural or medicinal purposes. Certainly our type specimens are particularly important because they are the ultimate arbiter in questions of identity and are the standard by which all other identifications are judged. In addition, voucher specimens that are used to identify samples of unknown plants of economic or ecological value are important to maintain. These specimens help to determine the correct species name and serve as the permanent record of that sample.

It is clear that there exists a multitude of reasons why we maintain and build our plant collections at the National Museum of Natural History. The "applied" uses of the collections, some of which are mentioned above, would not be possible without the "pure science" endeavors of our scientists in building up the comprehensive reference collections at the Museum, publishing identification guides, and devising biological classifications of the plants of the world. Even after the last plant species is discovered, described, and named, we will continue to add to the collections.

Congressional Open House

The Fourth Congressional Open House was held in the exhibit halls of the National Museum of Natural History on May 20. Organized by the Senate of Scientists, it has become an annual favorite event for Congresspersons, their staff, special guests, and their families. Following a buffet in the Rotunda, the 800 Congressional visitors went on an "expedition" to 12 theme sites encompassing the museum's research and outreach activities. **Paula DePriest** served as "field marshall," and the Botany Department was represented at two expedition sites.

Alice Tangerini presented "Picturing Plants: From Field to Herbarium," featuring illustrations done from living and dried plant material, with descriptions of working conditions in the field and the office. A camera lucida apparatus allowed the visitors to view and draw a greatly magnified *Schiedea* flower. Assisting Alice were **Nora Gallagher** and intern **Mariah Steinwinter**.

Continued on page 5

Staff Research

The Maryland shore and bluffs overlooking the Potomac River at Carderock, near the District of Columbia, were the site for two spring wildflower forays, on April 18 and 25, led by **Dan Nicolson** for the Botanical Society of Washington. Over 30 members of the Society participated, and almost 60 native and introduced species were observed in flower. A list of the species, with phenology data, has been compiled.

Elaine Haug, **Stan Shetler**, Elaine Shetler, **Sylvia Orli** and **Mark Strong** took part in "Bioblitz" on May 22-23. Hosted by the U.S. Fish and Wildlife Service, the 24 hours of concentrated collecting and identification of specimens was held at the new Occoquan Bay National Wildlife Refuge, a 580-acre area in Woodbridge, Prince William County, Virginia. The diverse habitats include upland forest, wet and dry meadows, bogs, swamps, marshland, and Potomac River shoreline. Elaine Haug has been collecting plant vouchers for five years, yielding 600 species including 75 county records. The Bioblitz collecting trip added approximately 10 new plant species to the list. More than 250 bird species, 52 butterfly species, and 200 to 300 other insect species have also been recorded from the refuge.

Bryan Dutton, former editorial assistant with the Flora of China project in the department, and currently working at the Brooklyn Botanical Garden on the Metropolitan Flora of New York City, has accepted a position as assistant professor at Western Oregon State University in Monmouth. Bryan's wife, Emma, a microbiologist, will take a position in Corvallis, Oregon.

Travel

Dieter Wasshausen (4/23-5/5) traveled to Rome and Florence, Italy to study classical botanical type specimens in the Webb Herbarium at the Museo Botanico.

Dan Nicolson (5/22) attended a memorial service at Harvard University for Reed C. Rollins (1911-1998), director of the Gray Herbarium from 1954 to his retirement in 1981.

Linda Hollenberg (5/24 -6/3) traveled to Edmonston, Canada to attend and participate in the annual meeting of the Society for the Preservation of Natural History Collections.

Barrett Brooks (5/25-5/29) traveled to Miami, Florida to undergo NAUI Divemaster training and assist with a Smithsonian Diving Course. He will also travel to Georgetown, Bahamas (6/22-7/6) to conduct research on and collect seaweeds.

James Norris (5/28-6/2) traveled to Leavenworth, Washington to participate in a symposium and workshop on "Controlling Established Populations of Alien Marine Species."

Mark Littler and Diane Littler (6/1-7/31) will travel to Ft. Pierce and the Florida Keys, and the Bahamas to continue ongoing marine research.

Warren Wagner (6/8-6/11) traveled to the University of California, Irvine to work with Steve Weller and Ann Sakai on a monograph of *Schiedea* and *Alsinidendron* (Caryophyllaceae) (32 spp.), and on a project with Sakai analyzing the ecological and phylogenetic correlates of the conservation status of the Hawaiian flora.

Paula DePriest (6/12-6/16) traveled to San Juan, Puerto Rico to attend and participate in the annual American Bryological and Lichenological Society and Mycological Society of America meetings.

Vicki Funk (6/19-6/24) traveled to Vancouver, Canada to attend evolution meetings; and to Sidney and Brisbane, Australia (7/10-7/31) to attend the Society for Conservation Biology meeting and conduct research at the University of Queensland.

Alice Tangerini (6/20-6/26) traveled to Ames, Iowa to participate in the national meeting of the Guild of Natural Science Illustrators held at Iowa State University.

Laurence Skog (7/1-7/7) will travel to Chicago, Illinois to present a lecture on "The Legacy of Bill Saylor (a hybridizer of Gesneriaceae)," at the international convention of the American Gloxinia and Gesneriad Society. He will also examine specimens at the Field Museum.

Michael Bordelon and **John Kress** (7/5-7/26) will travel to Singapore; Yangon, Myanmar (Burma); and Bangkok, Thailand for research and participation in the Heliconia Society International meeting.

Maria Faust (7/23-8/8) will travel to Flagstaff, Arizona to attend and participate in the annual meetings of the Phycological Society of America, the Society of Protozoologists, and the International Society of Evolutionary Protistology.

Departures

Two Botany research assistants will be leaving this summer. **Robynn Shannon**, who has worked with **Warren Wagner** for five years and one year as a volunteer with **Bob Faden**, and **Nora Gallagher**, **John Kress'** assistant for three years. Nora's replacement will be **Ida Lopez**, who received a B.S. in biology from Panamerican University, Edinburg, Texas. For the past five years, Lopez worked in the accounting department of the Smithsonian Institution Catalogue.

Gift From ECT

The Latin American Plants Program received a $1,000 gift from the Ethnobiology and Conservation Team (ECT) to purchase copies of *Volume 3 (the Americas)* of *Centres of Plant Diversity: A Guide and Strategy for their Conservation* to distribute to major herbaria in Latin America.

John Julius Wurdack
(28 April 1921 - 13 May 1998)

John J. Wurdack, curator emeritus of botany, National Museum of Natural History, Smithsonian Institution, died of cancer May 13, 1998 at age 77 in Lanham, Maryland.

John was well known as a specialist in the systematics of neotropical Melastomataceae, preparing book-length treatments of the family for the floras of Venezuela (1973), Ecuador (1980), and the Guianas (1993). He published more than 130 scientific papers, and described 905 taxa of flowering plants, including 19 genera and 701 species, as new to science.

A native of Pittsburgh, Pennsylvania, he received a B.S. (1942) from the University of Pittsburgh. In late 1942, he was inducted into the U.S. Army and during World War II was stationed at Parnamirim Air Field, Natal, Brazil, where he served as a sanitary engineer. In an era before jet airplanes, Natal was an important stop on the air ferry route to Africa, Europe, and Asia. After the war John was posted to Japan. Already interested in plants, he took advantage of opportunities to collect scientific specimens in Brazil and the Far East.

In 1948, he completed a B.S. in Sanitary Engineering at the University of Illinois at Urbana. He then turned his full attention to botany and began a decade long association with the New York Botanical Garden; first (1949-1952), as a technical assistant while he studied for his Ph.D. (granted by Columbia University in 1952), and then (1952-1960) as an assistant and associate curator. It was during this period that he participated in a series of scientific expeditions organized by Basset Maguire, which took him to many of the remote mountains of the "Lost World" of Amazonian Venezuela. He traveled thousands of miles by river and on foot and became the first scientist to explore or to collect botanical specimens on a number of tepuis in the Venezuela Guayana. Most notably, in 1953 he was with Maguire and others when Cerro de la Neblina was first discovered, named, and climbed. Cerro de la Neblina, a large massif on the Venezuelan-Brazilian border, was one of the last major mountain ranges to be discovered in the world.

In 1960, he accepted an appointment as an associate curator in the U.S. National Museum (now National Museum of Natural History) and began a new phase in his career, working principally with the scientific collections in the U.S. National Herbarium and the tens of thousands of specimens sent to him as gifts for determination. Several times he made extended trips to Europe to study historical and type material. Typically this was done just as he was about to finish a major floristic project. He made one last extended collecting trip to Peru (1962) and then shorter, and less strenuous, trips to Venezuela and Jamaica. He had a playful disdain for "so called" modern expeditions where botanists seldom left their car (or helicopter) and he was fond of stating that botanical exploration was for younger botanists, certainly those who were less than 40, since the work demanded stamina.

After his formal retirement as curator in 1991, John continued his scientific research and came to the museum daily until medical complaints hospitalized him in December 1997. Reminiscences of his student days in New York were published in *Brittonia* (48: 359-361. 1996) and letters describing his collecting in Venezuela are excerpted in the *Memoirs of the New York Botanical Garden* (64: 1-28. 1990).

John obviously was held in high esteem by his peers, who have named more than 140 plants in his honor (including three genera). In 1997, a Festschrift was published to celebrate his career and 75th birthday. It was printed in Caracas, Venezuela, as *BioLlania, Edición Especial No. 6* and almost 50 scientists worldwide contributed papers.

John was as passionate about plants at home as he was at work. He was a keen gardener, growing exotic and native species at his Beltsville, Maryland home. He also was a charter member of the Potomac Valley Chapter of the American Rock Garden Society.

John's wife, Marie L. Solt, died in 1978. He is survived by two sons, Kenneth of Chapel Hill, North Carolina (also a botanist), and Douglas of Silver Spring, Maryland.

[by Laurence J. Dorr]

Wurdack Memorial Service

A memorial service for Dr. J.J. Wurdack will be held on Thursday, July 9, 1998, at 2:00 p.m. in the Baird Auditorium at the Smithsonian Institution's National Museum of Natural History, Washington, DC. A reception will follow in the Museum's Executive Conference Room. Everyone is welcome. Please R.S.V.P.: (202) 357-2534. All are invited to send a short remembrance to be read during the program. Send to: Dan H. Nicolson, Botany Department, MRC-166, NMNH, Smithsonian Institution, Washington, DC 20560-0166 (email: nicolson.dan@nmnh.si.edu).

Congressional Open House

Continued from page 3

In the Marine Ecosystems Hall, **Jim Norris, Katie Bucher**, and **Bob Sims** displayed economically important seaweeds, provided a handout listing common food items (such as ice cream and chocolate milk) that use algal extracts, as well as an on-line connection to the Algae Web site at the Smithsonian, herbarium specimens, and a computer slide show. **Mark Littler, Diane Littler, Barrett Brooks**, and **Gene Rosenberg** displayed reef-building plants, the coralline algae, and massive specimens of these stony red algae which served to highlight their important ecological roles as a habitat for some reef animals and major builders in many reef systems.

Publications

Dorr, L. J. 1998. Review of: *Guide to the Ewan Papers*, compiled by D. Holland *et al*., *Taxon* 47(2): 533.

Pruski, J. F. 1998. *Helianthus porteri* (A. Gray) Pruski (Compositae), a new combination validated for the Confederate Daisy. *Castanea* 63: 74-75.

Pruski, J. F. 1998. *Stenopadus andicola* sp. nov. (Asteraceae: Mutisieae), a new generic record for Ecuador. *Novon* 8: 67-69.

Soreng, R.J. and J. I. Davis. 1998. Phylogenetics and character evolution in the grass family (Poaceae): simultaneous analysis of morphological and chloroplast DNA restriction site character sets. *Bot. Rev.* 64 (1): 1-85.

Soreng, R.J., P. Hein and H. Scholz. 1997. *Poa akmanii* (Poaceae), a new species from Turkey. *Willdenowia* 27: 195-198.

New Compactors

Continued from page 1

us 25% expansion, everybody thinks, well, that's 1% a year—it's good for 25 years—but we have used up half of that expansion just decompressing the specimens that were crammed into the pigeon holes," Lellinger said.

The Department plans to build an additional six bays of compactors on the fourth floor, bringing the total to nine, plus nine bays on the fifth floor. "Once fully compactorized, at the present rate of growth of the collections, it would take four decades to fill the existing space," Bell said. With an anticipated price tag of an additional $3.9 million needed to complete the project in the next seven years, the tireless working group is taking a short break to enjoy their accomplishments before they push on to the next phase of the project.

Art by Alice Tangerini

Commelina stefaniniana Chiov.

This illustration of *Commelina stefaniniana* Chiov., a member of the Commelinaceae, was published in the *Flora of Somalia*, Vol. 4 in 1995 and in the *Flora of Ethiopia and Eritrea*, Vol. 6 in 1997. The plant was collected by Bob Faden in Mukayle, Somalia in 1988 when he accompanied Canadian plant ecologist Peter Kuchar in the field. The species is restricted to the arid Somalia-Masai northeastern African regional center of endemism, where it occurs in Somalia, eastern and southern Ethiopia, and northern Kenya. It has been cultivated in the Botany Department Research Greenhouses ever since. The large, blue flowers are slightly fragrant, a feature otherwise unknown in the genus.