

The Plant Press

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Smithsonian Institution

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Department Profile

Librarian Maintains a Vintage Ferrari

By Robert A. DeFilippis

Indeed, Ruth F. Schallert, the Botany Branch librarian at the National Museum of Natural History, has been the custodian of a cherished departmental Ferrari for years. The valuable object in question is, however, not a luxury model 1996 F355 Spider Convertible valued at \$124,000, nor even a red-and-black 1991 Testarossa worth \$77,500, although the library's prize is also of Italian origin. The item is actually a book about citrus fruit by Giovanni Battista Ferrari, published in Rome in 1646, entitled *Hesperides*; it is the oldest book in the Botany Library. In Greek mythology the Hesperides were three maidens who guarded the Golden Apples sought by Hercules. The identity of the classical golden "apples" is now thought to be the orange (*Citrus sinensis*), and a further link to the Hesperides is found in the botanical term for the thick-skinned citrus fruit: "hesperidium." Two of the Hesperidean maidens, Aegle and Hesperis (or Hesperethusa), became namesakes for rutaceous genera: one genus contains *Aegle marmelos*, whose common name is "golden apple"; the other genus, *Hesperethusa*, is now a synonym of *Naringi*; the third nymph, Erythea, is commemorated in a palm genus synonymized with *Brahea*.

Giovanni Ferrari's *Hesperides*, which contains some of the earliest illustrations of the orangeries that were once in vogue for growing citrus, was, like many of the rare books in the Botany Library, an early gift. Among the donors who helped build the collections were prominent botanists

such as Captain John Donnell Smith of Baltimore, who gave 1,600 bound volumes on Central American systematic botany in 1905; the renowned agrostologists Albert Spear Hitchcock and Mary Agnes Chase, who gave 1,500 volumes on grasses in 1928; and Floyd Alonzo McClure (bamboos), E. Yale Dawson (algae) and W. Andrew Archer (inventor of "Archer's Solution" used for mounting plant specimens in many herbaria). The total number of volumes in the Botany Library is now approximately 42,500. Is every one of them worth reading? Truman Capote's reaction to Jack Kerouac's work was: "It isn't writing at all - it's typing," a critique that could extend, depending on individual bias, to some holdings in any library.

Whether the patron is a scholar who makes daily visits to the incoming literature, or the variety who seems to frequent the library once every Ice Age, Schallert is available to share her knowledge with everyone, staff and visitors alike. Her background is extensive. A native of western Wisconsin, she did undergraduate work at Luther College, Decorah, Iowa and received her professional librarian degree from the University of Michigan at Ann Arbor. Since her first job, in the Art Library of the University of Iowa, Schallert's career has encompassed three government libraries: the Pacific Salmon Investigations library of the U.S. Fish and Wildlife Service in Seattle, Washington; the Naval Oceano-

graphic Office library in Washington, D.C.; and, since 1966, the National Museum of Natural History, largely as Botany Branch librarian, with a brief part-time stint covering the Entomology Branch library. Schallert, an avid reader who is adept at both reference inquiries and library collections management, is a member of the American Library Association, the Special Libraries Association,

the Council on Botanical and Horticultural Libraries, and the Society for the History of Natural History. Her daughter, Karla Farrall, has been a stalwart volunteer in the library for many years.

The Botany Branch Library is one link in an extensive Natural History

Museum network of departmental libraries of varying sizes, such as the Anthropology, Birds, Entomology, Fishes, Invertebrate Zoology, Mammals, Minerals, Mollusks, Vertebrate Paleontology, and Reptile libraries, as well as the Natural History branch (for general science and ecology). The Horticulture library, located in the Arts and Industries Building, might be called a sister-library that contains much cognate material of interest to botanists, and vice-versa. Some overlapping is to be expected: Linnaeana is held in many branch libraries besides Botany, separated according to the animal groups that Carl Linnaeus covered. Another overlap, the varied publications classified as "Ethno-

*The literature
of botany is
burgeoning
daily.*

New Faces

Jacques Cayouette, visiting scientist from Agriculture and Agri-Food Canada, Ottawa, Ontario, has arrived in the Department for nine months to conduct a taxonomic study of *Bromus ciliatus/B. richardsonii* with **Paul Peterson**, including morphology, anatomy and cytology; a DNA study with Bruce Coleman from Canada; and a taxonomic study of the *Poa glauca* complex with **Robert Soreng**, including morphology, anatomy and cytology. His other projects are a "Manual of Grasses of Eastern Canada" (in preparation) and a history of early plant collectors in Canada. "The Smithsonian was my first choice for a work transfer, because it has two excellent agrostologists, an operating greenhouse for growing *Bromus*, a rich collection of specimens including types, and a high quality library," Cayouette said.



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Travel

Laurence Skog (11/6-11/10) traveled to the New York Botanical Garden, Bronx, New York to examine specimens in the herbarium.

W. John Kress (11/11-11/14) traveled to Warrenton, Virginia to attend the Presidents' Summit, sponsored by the American Institute of Biological Sciences (AIBS); and on 11/19-11/21 to Miami, Florida to attend a meeting of the Coalition for Excellence in Tropical Biology.

Robert Faden (11/16-11/26) traveled to the Royal Botanic Gardens, Kew to work on floristic treatments of Commelinaceae for *Flora of Tropical East Africa* and *Flora Zambesiaca*; to study type specimens borrowed from BR and BRLU by Kew; and to consult with Paula Rudall and Mark Chase of the Jodrell Laboratory about the Commelinales Workshop, subsequently held at the Smithsonian (see related article in this issue).

Paula DePriest (11/21-11/23) traveled to Durham, North Carolina to conduct research and attend a doctoral committee meeting; and 12/11-12/23 to Zurich and Geneva, Switzerland, and Madrid, Spain. In Zurich she visited the laboratory of

lichenologist Rosmarie Honegger at the University of Zurich Institute of Plant Biology and presented a seminar. In Geneva she visited lichenologist Philippe Clerc and examined over 100 Cladoniaceae type specimens and historic collections in the Herbarium of the Conservatoire et Jardin Botaniques. In Madrid DePriest gave a keynote lecture "Examining the Phylogeny and Evolution of Lichen Symbionts" at the XIII Symposium of Cryptogamic Botany, a biannual meeting of lichenologists, mycologists, bryologists, pteridologists and phycologists from Spain and Portugal.

Diane and Mark Littler (12/15-2/16) traveled to Ft. Pierce, Florida and the Florida Keys to continue ongoing research at the Smithsonian Marine Station.

Gary Krupnick (1/5-1/7) traveled to St. Louis, Missouri to attend a "Workshop on Promoting Use of Native Organisms in Restoration" sponsored by the Department of the Interior.

Maria Faust (2/2-2/13) traveled to Australia to attend the 9th International Conference on Harmful Algal Blooms in Hobart, Tasmania.

Visitors

Shiliang Zhou, Institute of Botany, Beijing; Colorado State University; profiling *Panax* populations with **Elizabeth Zimmer** and **Jun Wen** (1/22-4/30).

Julie Barcelona, Miami University, Oxford, Ohio (MU); Philippine ferns (2/14-3/30).

Robert Kral, Botanical Research Institute of Texas, Fort Worth (BRIT); Cyperaceae, Xyridaceae (2/7-2/29).

Lynn Bobs, University of Utah (UT); Costarican Solanaceae (2/22-2/23).

Staff Talks

Laurence Dorr gave a talk on "Plant Collectors in Madagascar and the Comoro Islands" on 5 October 1999 at a meeting of the Botanical Society of Washington in the National Museum of Natural History.

Hygyung Kim, post-doctoral fellow at the Laboratory of Molecular Systematics, presented a talk on "Phylogenetic Inferences Using Molecular and Morphological Characters in Mutisieae (Cichorioideae, Asteraceae)" at the 54th Annual Meeting of the Korean Association of Biological Science, 29 -30 October 1999.

Vicki Funk delivered a talk entitled "Biogeography of the Subfamily Cichorioideae (Compositae): a Southern Hemisphere Story," at the Dampier 300 Meeting, a joint meeting of the Society of Australian Systematic Biologists and the Australian Society of Systematic Botany, held 6-10 December 1999 in Perth, Western Australia.

Gary Krupnick gave a seminar entitled "Sex Expression in Two Monoecious Plants: The Effects of Insect Herbivory and Ethylene" on 11 January for the Department of Botany seminar series.

Botany for the New Century

We have entered a "New Century of Biology" in which we expect to witness an explosion of discoveries that will revolutionize the biological sciences and in particular the relationship of human society to the environment. Just as Galileo, Copernicus, Newton, Einstein, and others made revolutionary breakthroughs in our understanding of the physical world and the universe in past centuries, major conceptual breakthroughs in our understanding of the biological world are imminent. Our conceptualization of the biological world has already been marked by progress in such areas as understanding the processes of evolution and ecology, the biochemical structure of DNA, and the simple, but critical, calculation of the magnitude of biodiversity on the planet. In the New Century advances in the biological sciences will be made in an age of new technologies, in a rapidly changing environment caused by human activities, and with a new relationship to global economics and social structure.

The voyages of discovery of the early naturalists during the eighteenth and nineteenth centuries were in many ways the beginning of the study of modern organismal biology. The exploration of unknown lands and habitats funded by monarchs and wealthy supporters led to the discovery of many new kinds of plants, animals, and microorganisms, both fossil and contemporary. The early naturalists focussed their attention on species and populations as well as the habitats in which these organisms were found. These broadly trained biologists studying the past as well as the present biota provided the raw data that were critical for the shaping of Darwin's theory of evolution by natural selection. A rigorous scientific explanation for the origin of complex biological systems had been formulated. Such organism-based studies have continued to the present resulting in the development of the fields of systematics, population biology, community ecology and ecosystem/landscape-level sciences.

In the mid-1900s the biological community also experienced the emergence of a reductionist approach to studying life. The new biologists were strongly influenced by the physicists and mathematicians, and attempted to investigate biological complexity by fracturing it into its essential constituents. The focus of many biologists, as well as the value placed by society and governments on biological research, abruptly shifted from the organism to the cell and its parts. The era of the gene and the macromolecule began. The last decades of the 20th Century saw tremendous advances in our understanding of genetic control, cellular functions, biochemical interactions and regulations, as well as the initiation of a complete sequencing of the metazoan genome.

Now in the New Century we have a better understanding of biology at both the lower levels (i.e.,

cellular and molecular) and the higher levels (i.e., population, ecosystem, and global) of organization. We are poised to reassemble into a synthetic biological reality the elemental parts that have been carefully dissected by the molecular and cell biologist as well as population and ecosystem ecologists over the last 50 years.

The consensual marriage of organismal biology with the advanced scientific tools of technology will be an essential element for our progress in understanding global "biocomplexity" during the decades to come. Most scientists agree that global environments face a tremendous threat as human populations expand and natural resources are consumed. As natural habitats rapidly disappear, the next century will be our last opportunity to fully understand the extent of the biological complexity of the planet; this understanding will be dependent on the effective adaptation and utilization of new technologies.

As botanists and plant hunters, we can envision that in the New Age of Exploration of the 21st Century the electronic naturalist equipped with GPS, palm-top computers, web-based communication, and mini-DNA samplers will comb the remaining unexplored habitats of the earth identifying and recording the characters and habitats of plant species not yet known to science. The information gathered by these botanical gladiators during their travels to remote and often inhospitable lands will be sent with the speed of the internet to their colleagues back in the lab, where the genetic composition and phylogenetic position in the tree of life of each new species will be instantaneously determined. The habitat data will be modeled with unparalleled speed and accuracy by super computers to determine the place of each species in its respective ecosystem. And the biochemical constituents of each species will be automatically screened and analyzed for any compounds that may be of benefit to society. Our vision of discovering and describing the complete natural world will become a reality.

In a more general sense a major goal for biologists in the New Century must be to define an effective strategy for integrating biological sciences with global economics and human social structure. The impending changes in the basic biological functioning of the planet, resulting from the unprecedented level of social and economic development, will continue to have a profound effect on human populations. Global well-being will depend on a concerted effort to integrate biological information, economic needs, and social organization.



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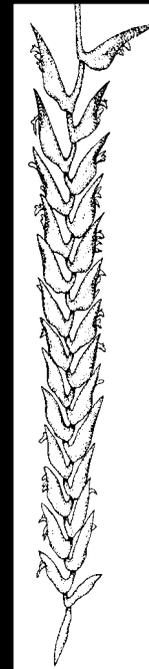
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Staff Research

Mones Abu-Asab (collaborator), **Paul Peterson**, **Stanwyn Shetler**, and **Sylvia Stone Orli** have documented the effects of global warming on 100 species of flowering plants from the Washington, D.C. area. Over a 29-year period 89 species showed a significant trend for earlier flowering of -4.5 days. Onset of flowering in these 89 species is inversely correlated with the yearly average spring minimum temperature.

Basil Stergios, professor of botany and director of the herbarium, Universidad Nacional Experimental de los Llanos

Ezequiel Zamora (UNELLEZ), Guanare, Venezuela, has been named a Senior Mellon Fellow and will be working with **Laurence Dorr** on preparing a treatment of the monocotyledons for a projected *Flora de Guaramacal*, which when complete, will treat all vascular plants of this national park in the Venezuelan Andes. The park covers 20,000 hectares between 1600 and 3100 m elevation in Trujillo and Portuguesa states. It has been the focus of intense collecting the past few years, and more than 500 genera and 1000-1200 species of vascular plants are estimated to occur in this small area. Although there is a great deal still to be learned about the floristic composition of the park, the minimal materials necessary to prepare a manual for the identification of the flora are now in hand. The forthcoming manual will help make Guaramacal an important focus of biological research in the Andes.

In addition to Stergios, Nidia Cuello and Miguel Niño, who are also professors at UNELLEZ, will be involved in this phase of the flora project and will be visiting the Department for several months each. German Carnevali, who is now based in Mexico, will come here to continue his work on a treatment of the Orchidaceae for the flora. Rodrigo Duno de Stefano and Ricarda Riina, both at the Jardín Botánico de Caracas, will be visiting to work on several smaller families and will also take the opportunity to advance their catalog of the flora of the nearby Dinira National Park. Additionally, Alan Smith from Berkeley will be visiting to continue his study of the ferns and fern allies of Guaramacal. Ferns are an important component of the vascular flora and approximately 250 species have been found in the park.

Palynologist Joan W. Nowicke Retires

On 31 December 1999, **Joan W. Nowicke** retired after 27 ½ years of service to the Smithsonian Institution, as curator in the Department since 1972. A native of St. Louis, Missouri, she is an internationally recognized palynologist specializing in pollen morphology and its relation to systematics. Her body of work has largely emphasized the palynotaxonomy of the Caryophyllales (Centrospermae), a highly distinctive order comprising ten core families and as many as 10,000 species, as well as the Berberidaceae, Ranunculaceae, Onagraceae and Euphorbiaceae. This corpus of research has embraced several intriguing, palynologically and taxonomically lesser-known groups of plants variously ascribed as the Pandaceae (the genus *Panda* considered euphorbiaceous), Achatocarpaceae, Gyrostemonaceae, Corynocarpaceae, Paeoniaceae, Hoplostigmataceae, Lardizabalaceae (Sargentodoxaceae), and the Madagascan Didiereaceae. She is commemorated by the Mexican genus *Nowickea* J. Martinez G. & J.A. McDonald (1989) (Phytolaccaceae).

Nowicke received her Bachelor of Arts

degree from Washington University, St. Louis (1958), Master of Arts from the University of Missouri, Columbia (1962), and Ph.D. from Washington University in 1968. Shortly after graduation she held a postgraduate fellowship during which treatments of the Apocynaceae, Boraginaceae, Labiatae and Rhamnaceae for the *Flora of Panama* were prepared. Owing to Nowicke's extensive knowledge of pollen, she was recognized as an American media icon for a time in the 1980's, due to research into the identity of the mysterious "Yellow Rain" of Southeast Asia. It was an era when America seemed to have military and political expectations in Cambodia and Laos. She co-authored two seminal papers on the subject which appeared in *Nature* 309(5965) (1984) and *Scientific American* 252(9) (1985). The "Yellow Rain" had been purported by some governments to be a form of chemical biological warfare in which pollen was used to disseminate mycotoxins. Palynological research conducted by Nowicke and colleagues determined that the yellow pollen component could be derived from common Asian

taxa, and the rain-like distribution was the result of dense fecal showers from large *Apis dorsata* honeybees while in mass flight. Articles by numerous writers then took up this discovery, in the context of its bearing on the sensitive political issues involved, in the pages of diverse journals such as *The Atlantic* (October 1985), *The New Yorker* (11 February 1991), and *Arms Control Today* (September 1986).

In retirement Nowicke will be working on the completion of her comprehensive Euphorbiaceae Pollen Project, in association with Masamichi Takahashi of Japan, to examine the pollen morphology and exine structure, by TEM and SEM, of the subfamily Acalyphoideae, and relate the findings to the systematics of the group. Two articles covering several tribes have already appeared in the *Review of Palaeobotany and Palynology*, vol. 102 (1998) and vol. 105 (1999), with part 3 in press, and part 4 in progress.

[by Robert DeFilipps]

Funk in Australia

Vicki Funk returned from a six week trip to Australia on 9 January. She started in Australia by spending a week working with colleagues at the University of Queensland, Brisbane. They are using several modeling programs that employ georeferenced collections data to predict biodiversity. Next she went to Perth, Western Australia, where she attended the “Dampier 300 Meeting,” and delivered a paper. William Dampier collected plants in Shark Bay, Western Australia 300 years ago, hence the name of the meeting. Funk was impressed with the computer system set up at the Department of Conservation and Land Management (PERTH), and after being given a password she was able to access all the label data, including latitude and longitude, for all the species on her list.

Following the meeting she spent nine days collecting Compositae in extreme southwest Australia. Luckily, the rains lasted into early December and she was able to see many interesting plants that often are gone by this time of year. Trees in the Kari forest are 150 ft. tall and straight boled, but unfortunately they are being

logged at a rapid rate. The Compositae were found close to the coast along with zillions of flies. She reports that she has mastered the “Ozzie” (a.k.a. “Aussie”) salute and can spit flies and take pictures of plants at the same time.

Returning to the east coast, Funk did some collecting around Sydney and then took time for a holiday with Jim Nix in Queensland. They visited north Queensland to experience the Daintree rainforest during the rainy season, “salties” (huge salt water crocodiles) and all. In the mountains they saw many birds including the Buff Breasted Paradise Kingfisher. A highlight of the trip was a ride on the new Skyrail near Cairns. It travels over the top of the rainforest for seven kilometers, and in several places the cars are actually below the top of the canopy and you can literally touch the tree tops. New Year’s was spent at a small resort on Lady Elliott Island, a coral atoll at the southern end of the Great Barrier Reef. Over 140 miles from the east coast of Australia, the island is home to thousands of nesting sea birds of ca. 30 species, and provides great opportunities for snorkeling

and diving. After a few days of collecting on the western side of the mountains near Brisbane, Funk finally returned to Washington with memories of the numerous plants, more than 150 birds, 20 frog species, and the crocodiles, kangaroos, and platypus she encountered.

NPR Interviews Funk

Vicki Funk was a guest on National Public Radio on 7 February. Interviewed along side Barbara Ertter (University of California Berkeley) and Bruce Stein (The Nature Conservancy), Funk spoke about the on-going discoveries of previously unknown plant species. The group discussed how in the last 25 years, more than 1,000 new species have been found in the U.S., and how the public has made extraordinary discoveries in their own backyard gardens. You can listen to the show at the NPR Public Interest Web archives at <http://www.wamu.org/pi/shows/index.html>.

Nicolson in Europe

Dan H. Nicolson returned from a two week trip to Europe, after spending the last week of January in Berlin and the first week of February in Moscow. The week in Berlin was spent in a meeting of the Editorial Committee (see *Taxon* 48: 776. 1999) finalizing the revisions to the ICBN (International Code of Botanical Nomenclature) ratified by the 16th Botanical Congress in St. Louis. By way of preparation, Nicolson completed the draft entries for over 100 additional entries of Spermatophytes for the Appendices. Werner Greuter had prepared a draft of the Code text with all changes highlighted for discussion.

The week in Moscow was primarily aimed at going over 200 Forster collections (of the 2nd Cook Expedition 1772-1775) that underlie Pacific Botany. Most of these specimens came with Georg Hoffmann when he moved to Moscow from

Goettingen in 1804 (some may have been lost when Napoleon burned Moscow in 1815). Other Forster specimens have been found in the Trinius private herbarium that came via C.E. Weigel, still in the original papers with Greifswald’s watermark. Another interesting collection of South Indian materials, given by Robert Brown, is reputed to be attributable to Rheede (1637-1691), although Nicolson suspects it is later.

Nicolson was also involved with a project to make a CD-ROM of their type material. They have completed one on their Linnaean types, complete with commentary by C.E. Jarvis (BM) which is to be made available through the British Museum. They are now negotiating on something for the Forster types. Prof. Sergei Balandin, of the Department of Geobotany, is the coordinator of the Digital MW Project. The work is being completed by staff from

several departments, Dimitry Sokoloff of the Higher Plants Department, Sergei Majorov of the Botanical Garden staff, Sergei Simonov, and Sergei Sukhov.

Nicolson had a very hospitable stay in Moscow. He gave his slide show “Aroids and Me” to a packed room, followed by a reception attended by the heads of the three departments involved with the digitizing project. During his stay, he was fortunate to obtain scarce tickets to see Rimsky-Korsakov’s “Tsar’s Bride” at the Bolshoi and Shoshtakovitch’s “Lady Macbeth of Smolensk” at a small theater, half-filled by a first-class orchestra. Other highlights of his visit included a trip to the Pushkin Museum (many Impressionists, not to mention Egyptian, Greek and Coptic treasures) and the Tretyakov Museum (Russian artists), giving Nicolson a wonderful survey of Russian history as seen in paintings.

Virtual Identification in the Twenty-first Century

[*Editor's Note:* This is the second offering in a series of columns which will afford the curators of the Department of Botany an opportunity to discourse on their candid opinions, perhaps to critique and prognosticate, regarding the trends and state-of-the-art in their field of specialization. Paula DePriest is curator of lichens.]

As one of the world's great herbaria, we need to enter the future facing forward, not backward, in honing our research and collection program for the new millennium. What will botanical systematics be like in the next 20 years? How has molecular systematics changed our field? How will we access botanical information? What will be the role of the large (and costly) collections like our US National Herbarium?

So often we assume a defensive posture concerning the future of botanical research and collections. Thirty, forty, fifty years ago, funding was relatively ample for long-term botanical exploration, taxonomic studies, floristic revisions, monography, and collection building. We try to hold onto this tradition, making the case that such research needs little funding other than that for basic equipment, travel, and salaries. While we have been somewhat successful, botanists in other settings have had to largely abandon systematic research ten years ago. Yet, our funding continually falls behind other fields that have greater appetites – clearly the overall amount of funding is not the problem. The challenge for us now is to clarify our traditional goals and strengths and to invigorate them with appropriate new technologies. There is no intrinsic merit in being old-fashioned.

My prediction is that the Twenty-first Century will see a complete blurring of what is now viewed as traditional and modern taxonomic practice. Over the next ten years molecular research will cease to be a controversial issue in taxonomy and become a staple - just as microscopy did in the nineteenth century. We will standardize both the methods and application of molecular data. Our concepts will mesh information from these diverse sources so completely that we will no longer differen-

tiate them. Instead of testing one against the other we will look for the preponderance of data (numerically that will give great weight to molecular data). Here are some changes we must address:

- In the future, molecular data will be so easy to gather that it will not require a human hand much less a university-trained researcher. Potentially every new collection will be examined with molecular tools before anyone sorts or determines it.

- Specimens lacking critical characters will be “characterized” by sequence data. As we have already seen in environmental sampling, some organisms will be known only by their molecular signatures.

- Genomic-level sequencing will be applied to many taxa. Instead of having just a few genes that are typically sequenced we will have orders of magnitude more sequence data available for comparisons and analyses.

- We will generate so much molecular data that compiling, comparing, analyzing, organizing, and managing it will be major concerns. Large-scale analysis will require rapid advances in our computational abilities.

- Not only will we analyze nucleotide change, but also more complex changes in gene expression - the basis of much of our comparative morphology. Such studies will require visual interpretation of molecular data, whether of the activation of developmental gene assayed on microarray “chips,” or the anatomical positions of gene messages in an *in situ* hybridization.

- Within the next 20 years, consumers of botanical data will note that genomic sequences and gene expression maps without voucher specimens are useless. There will be two levels of data, that which is tied to specimens, collection data, taxonomic concepts and classification schemes, and that which must be discarded.

How can the Smithsonian face forward in modern systematics? It is clear that we have to employ molecular characters and phylogenetic methods in each of our systematic projects or accept the risk that competing systematists (even novices) will override our classification schemes. We need to look back at our traditional

research activities and determine how we can migrate them into the future. If we cannot be leaders in generating molecular data, then let's be leaders in developing systematically based information systems.

I propose that we immediately begin to develop a “Virtual Identification Center.” This would be an online repository of our collective systematic expertise that interactively links molecular and morphometric observations to taxonomic concepts, classification systems, and our collection catalog.

Imagine that a scientist has sequence data for an unknown reindeer lichen. Through a Smithsonian web interface the scientist could submit the sequences and use a search engine to find the most similar, or even most phylogenetically related, sequences. (A parallel entry could be through morphometric imaging.) Sequences produced under the “Virtual Identification Center” would be linked to the U.S. National Herbarium collection catalog, which would provide collection data, additional sequences, morphological observations, and even photographs. Collection records would, in turn, be linked to monographic-style species descriptions and classification schemes. The scientist would have a name for his reindeer lichen, and access to relevant collection data, taxonomic concepts and classification hypotheses.

What would be the role of the Smithsonian researcher? Many could elect to participate in selecting and verifying taxa and specimens that would be included in the “Virtual Identification” program. The Smithsonian would need to provide (or more likely contract) a fully automated, high-throughput sequencing facility and resources for detailed morphometric observations. Participating Smithsonian researchers would have exclusive access to the data for perhaps 12 months. A well-funded computational group would produce tools that allow researchers to efficiently manage and analyze this data for systematics publications. Systematic and monographic projects, even fieldwork, would be funded as a means to generate taxonomic and classification information

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DePriest

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for the "Virtual Identification Center." All of this activity would require and stimulate a vigorous inventory and catalog program.

The "Virtual Identification Center" would allow us to achieve many of our traditional goals. And, with the Center we could finally offer an identification service that responds to user needs in their own time frame. Imagine!

Orchid Exhibition

The Sixth Annual Orchid Exhibition presented by the Smithsonian Institution and the U.S. Botanic Garden, will be held through 26 March in the Arts and Industries Building, Smithsonian Institution, 900 Jefferson Dr., S.W., Washington, DC. The theme of the exhibit is "The Artistry of Orchids: Orchids and the Art They Inspire." An Orchid Festival will be held on 12 February. For information phone (202) 357-2700.

New Grass Web Site

The Catalogue of New World Grasses (Poaceae) is now available on the Web at <http://mobot.mobot.org/Pick/Search/nwgc.html>. The data are recorded in TROPICOS (Missouri Botanical Garden) and are directly reflected to the new web site. Included are c. 75,000 names for grasses worldwide (which apply to c. 4,000 New World species, and c. 25,000 synonyms), authorities, citations, types, classification, distribution, other bibliographic references, and acceptance of taxa and synonyms by the project. The project is ongoing, with accepted synonymy and regional distribution completed for subfamilies Anomochlooideae, Bambusoideae, Ehrhartoideae, and Pharoideae, and data for other subfamilies will follow.

[by Paul Peterson]

By Gary A. Krupnick

Along with the new millennium comes a new feature in The Plant Press: "The Conservation Column." With the Department's reestablished Plant Conservation Unit up and running once again, the Conservation Column will feature current research and activities of the Department as they relate to plant conservation, endangered species and threatened habitats.

As the new director of the Plant Conservation Unit, I have recently been involved in both conservation research and editorial duties. One accomplishment includes the resurrection of the *Biological Conservation Newsletter*, a monthly publication that had been on hiatus since July 1998. The newsletter is sent free of charge to subscribers including university faculty and staff, college and high school students, politicians, Peace Corps volunteers, and libraries of developing nations. I have also created a Web page for the newsletter, in which the latest issue as well as all previous issues since 1991 are available for viewing. For information about subscribing, or to view the latest issue, point your web browser to <http://www.mnh.si.edu/botany/bcn>.

One current endeavor in which I am involved includes a project on plant diversity and endemism across global ecoregions. This project is in collaboration with John Morrison (World Wildlife Fund),

George Schatz (Missouri Botanical Garden), Wayt Thomas (New York Botanical Garden) and Bil Alverson (The Field Museum). Our goal is to identify plant species richness and endemism within the 870 ecoregions worldwide as delineated by World Wildlife Fund.

The major goals of the Plant Conservation Unit are to gather information on endangered and threatened plants and critical habitats on a global scale, and to ensure that the information needed to reduce the decline in plant diversity, plant resources, and their habitats is readily available. To achieve these goals, I plan to take on the following responsibilities:

- serve as the department liaison with internal and external conservation organizations;
- direct an information service by responding to requests from a variety of sources, including the general public, non-government and government agencies, and conservation organizations by providing information on world plant conservation, such as specialists, threatened species, habitats, and literature;
- compile, research, and solicit information on endangered plants and habitats in national and international regions; and
- review current botanical and conservation literature, and maintain bibliographic databases.

Lyman B. Smith Celebration

On 5 November 1999 a reception was held in the National Museum of Natural History, in honor of the publication of "A Tribute to Lyman B. Smith" which appeared in the September 1999 issue of *Harvard Papers in Botany*. Guest speaker and editor of the publication, Jason R. Grant, showed slides highlighting the life and career of Dr. Smith, renowned specialist of Bromeliaceae, Begoniaceae and Velloziaceae. Special guests attending the affair included Lyman's brother, Dr. Robert

M. Smith from Winchester, Massachusetts, a granddaughter, Heather C. Smith from Tohatchi, New Mexico, and Carrie Karegannes, a longtime friend and *Begonia* specialist.

Commelinales Workshop at Smithsonian

A workshop on Commelinales and related groups, such as the Zingiberales, was held in the Department on 17-18 December 1999. The 15 participants were **Robert Faden, John Kress and Linda Prince** from the Department; Stephanie Bergamo, University of Georgia, Athens, GA; Lisa Campbell and Dennis Stevenson, New York Botanical Garden, New York, NY; Jerry Davis and Melanie Schori, Cornell University, Ithaca, NY; Chris Hardy, New York Botanical Garden and Cornell University; Tim Evans, Hope College, Holland, MI; Tom Givnish, University of Wisconsin, Madison, WI; Sean Graham, University of Alberta, Edmonton, Canada; Paula Rudall, Royal Botanic Gardens, Kew, England; Mike Simpson, San Diego State University, San Diego, CA; and Matt Unwin, Miami University, Oxford, OH.

The idea for the workshop arose from informal discussions among Faden, Evans, Simpson and Stevenson at the Monocots II Symposium in Sydney, Australia in September 1998. Faden organized the workshop and obtained Short-Term Visitor funds from the Smithsonian's Office of Fellowships and Grants to support some of the participants. Logistical and audiovisual support was ably furnished by **Stanley Yankowski** of the Department.

A variety of topics was presented and discussed. Presentations were made by Stevenson, Davis, Givnish, Graham, Kress, Prince, Rudall, Evans, Faden, Simpson, Hardy and Campbell. The topics presented included molecular phylogenies of different groups, using a variety of genes, morphological character distributions within Commelinales and within the larger commelinid lineage, and the position of the Hanguanaceae, a family that shows relationships with both the Commelinales and Zingiberales. By the end of the meeting it was decided that the workshop participants will continue to remain in contact, perhaps through setting up a website; will herewith be called the Commelinid Working Group; will encourage other researchers on these plants to join the group; will collaborate and

cooperate on research; and will organize a symposium for the Monocots III Symposium in 2003.

[by Robert Faden]

Appointments and Awards

Alain Touwaide, senior fellow in Byzantine Studies at Harvard University's Dumbarton Oaks in Georgetown, Washington, D.C., and his wife, **Emanuela Appetiti**, have recently been appointed collaborators in the Department. Touwaide is preparing a materia medica, primarily medicinal plants, of the Ancient World (Mediterranean), from Greek, Latin and Arabic texts. He is particularly interested in the problems of the transfer of knowledge from the ancients and understanding how we think we know what plants and other elements were used. After visiting many European libraries holding original texts, the Touwaides have compiled a massive database including the original texts, a bibliography, the identifications proposed by authors in the bibliography and their illustrations in the manuscripts. They hope to publish a book in the next two to three years.

John Pruski has been appointed to the Comité Asesor (Advisory Committee) of the journal *Acta Botanica Venezuelica*.

Gery Allan, post-doctoral fellow, has been selected for the Rupert Barneby Award for herbarium studies at the New York Botanical Garden, in connection with his research on the genus *Lotus*.

Compactorization Update

Compactorization of Bay 8 began on 31 January. The affected area includes: Fabaceae, 3766 *Astragalus* through Euphorbiaceae, 4407 *Acalypha*. Cabinets

from Bay 8 will be relocated and will block the following areas for about 5 weeks: Rows 8-9 Taxaceae-Pinaceae, Rows 32-33 Pontederiaceae-Velloziaceae, Rows 36-37 Piperaceae (in part)-Fagaceae (in part), Rows 38-39 Fagaceae (in part)-Proteaceae (in part), Rows 45-46 Nymphaeaceae-Myristicaceae (in part). In approximately five weeks, work on Bay 3 [Poaceae, *Cordochloa-Spinifex*] will begin. Approximate schedule is: Bay 8: 31 January-3 March; Bay 3: 6 March-7 April. Visitors to the herbarium are requested to be aware of the schedule and check with **Deborah Bell** or **Linda Hollenberg** in advance. This notice will also be posted on the Web.

[by Deborah Bell]

Velva Rudd (1910 - 1999)

Velva E. Rudd, legume specialist and former curator in the Department, died peacefully on 9 December 1999 at her home in California. After retiring from the Smithsonian, she was for a time a staff associate in the herbarium of California State University in Northridge. She is commemorated by the Mexican legume genus *Ruddia* Yakovlev (1971), and various species named in her honor including *Clidemia ruddae* Wurdack (Melastomataceae) from Mexico, *Acacia ruddiae* Janzen from Costa Rica, *Dioclea ruddiae* R.H. Maxwell from Venezuela, and *Ormosia ruddiana* Yakovlev from Minas Gerais, Brazil.

Millennium Moments

[*Editor's Note:* In recognition of the new millennium, and new century, we asked a few randomly selected curators in the Department to elucidate their unvarnished aspirations and botanical hopes for the new era.]

Harold Robinson

"It is my fond hope that the new generations of botanists will learn how imperfect their knowledge of evolution is. In addition, it is important to understand that a perfect knowledge of evolution does not make a pretty picture and is not as useful to taxonomists as they might think. The art of useful taxonomic classification involves standing at a reasonable distance and overlooking many details, especially those observed only via expensive and laborious techniques. I hope they will learn to use what new methods reveal about polyphyletic versus monophyletic groups, but be aware of the very real limits of what some inadequately selected, poorly

polarized characters or limited areas of DNA sampling seem to portray."

Paul Peterson

"I would hope that herbarium specimen data would become more widely available on the net, thus insuring its continued importance for incorporation in monographs, revisions, floras and for assessing the status of rare, threatened, and endangered plants."

Paula DePriest

"The next millennium will be about the globalization of information. Whether the information is character analyses (morphological, molecular, ecological, physiological, etc.), nomenclature and synonymy, bibliography, or distribution and collection data, whether it comes from the US Herbarium and our collecting expeditions or our colleagues and competitors around the world, it will all be linked, merged,

vouchered (I hope in herbaria!) and available at our fingertips – or maybe directly in our minds."

Dan Nicolson

"My hope for the new millennium was articulated 133 years ago in Alphonse De Candolle's prophetic Introduction to his 1867 *Laws of Botanical Nomenclature* (translated from French): 'There will come a time... when science will have need of some great renovation of its formulae. This nomenclature which we now strive to improve will then appear like an old scaffolding, laboriously patched together and surrounded and encumbered by the debris of rejected parts. The edifice of science will have been built but the rubbish incident to its construction not cleared away. Then perhaps there will arise something wholly different from Linnaean nomenclature, something so designed to give certain and definite names to certain and definite taxa.'"

News on the Web

The Botany Intranet site has a new link, the weekly "Greenhouse Plant of the Week". We hope to take the site "public" within the year to help illustrate another, more colorful, part of the Department's mission. The digital camera for photographing the plants was donated by John Bartell, head of the Museum Support Center. The plant of the week can be only be accessed from Smithsonian computers by viewing the Botany Intranet page at <http://linnaeus.si.edu/intranet/>. The greenhouse plant page is: <http://linnaeus.si.edu/greenhse/pltofwk.htm>.

[by Leslie Brothers]

Department of Botany Reissues Journal

Contributions from the United States National Herbarium has been reissued from the Department. The journal was first published in 1890 by the United States Department of Agriculture. From 1 July 1902 forward it was published as a bulletin of the United States National Museum. The series was discontinued after volume 38, 1974, and has been revived with volume 39, as a venue for publishing longer taxonomic papers, checklists, floras, and monographs, produced by the staff and associates at the U.S. National Herbarium. It is externally peer-reviewed, and published at irregular intervals. Subscription and other correspondence should be addressed to: CUSNH, Department of Botany, National Museum of

Natural History, Smithsonian Institution, Washington, DC 20560-0166, U.S.A. E-mail: CUSNH@nmnh.si.edu.

The present issue (February 2000), available free while supplies last, is: Judziewicz, E.J., Sorong, R.J., Davidse, G., Peterson, P.M., Filgueiras, T.S. and F.O. Zuloaga. 2000. Catalogue of New World Grasses (Poaceae): I. Subfamilies Anomochlooideae, Bambusoideae, Ehrhartoideae, and Pharoideae. *Contr. U.S. Nat. Herb.* 39: 1-128.

Schallert

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botany," is distributed among the Botany, Anthropology, African Art and Horticulture libraries, sometimes with copies lodged at the STRI (Smithsonian Tropical Research Institute) library in Panama. Additionally, in the Botany Department itself are several "extension" subsets of accessible literature, library-style accumulations of books and journals on ferns, lichens, mosses, diatoms, algae and biogeography, which also serve the needs of researchers.

One salient feature of the Botany Branch Library is its large assemblage of field notebooks, mostly made by collectors associated with the Institution and other branches of the federal government. The variety of people represented in this unique repository is suggested by the collection notebooks of: Joseph F. Rock (1884-1962), botanical explorer for the U.S. Department of Agriculture who collected in Thailand and China in the 1920's and wrote "The Chaulmoogra Tree... Survey Conducted in Siam, Burma, Assam, and Bengal" (1922); George R. Vasey (1822-1893), curator of the U.S. National Herbarium, who collected in California in 1880 and wrote "Grasses of the Pacific Slope" (1892); Frank H. Knowlton (1860-1926), paleobotanist with the U.S. Geological Survey who collected in Colorado and Wyoming in 1896 and posthumously published the "Flora of the Denver and Associated Formations of Colorado" (1930); and Erik L. Ekman (1883-1931), Swedish botanist and explorer whose Haiti collections of 1917 were published by I. Urban as "Plantae Haitenses Novae vel Rariores" (1921).

The Botany Library is now operating at nearly full capacity, and due to crowded conditions some books are starting to be "shelved" on the floor, though they can be avoided by doing a sideways "crab-walk" in the narrower rows. Meanwhile, the literature of botany is burgeoning daily. The current explosion of new journals alone is exemplified by the following titles selected at random from those first published in the 1990's, and provided with one-word names curiously reminiscent of plant genera: *Arnaldoa* (from Trujillo, Peru, first issue 1991, not to be confused with

Arnoldia); *Bocconeia* (Palermo, 1991); *Gesneriana* (Sarasota, 1995); *Pabstia* (Carangola, Brazil, 1991); *Rojasiana* (Asuncion, Paraguay, 1995); *Sandakania* (Sabah, Malaysia, 1992); *Thaiszia* (Slovakia, 1991); and *Wulfenia* (Klagenfurt, Austria, 1992).

Numerous original publications have emanated from the staff of the Department of Botany and the U.S. National Herbarium over the years, and the practice continues to the present day. The series entitled *Smithsonian Contributions to Botany* began as Number 1 in 1969 with Dan H. Nicolson's revision of the aroid genus *Aglaonema*, and is currently up to Number 89 (1999), a classification of the American Vernoniae (Asteraceae) by Harold Robinson. Of longer lineage is the series entitled *Contributions from the United States National Herbarium*, which began in 1890, was discontinued in 1974, and is now revived for the foreseeable future, beginning with the year 2000 (Volume 39). The earlier series of "*Contr. U.S. Nat. Herb.*" included many classical studies such as: "Plant Life of Alabama" by C. Mohr (vol. 6); "Useful Plants of Guam" by W.E. Safford (vol. 9); "Flora of New Mexico" by E.O. Wootton and P.C. Standley (vol. 19); and "Trees and Shrubs of Mexico" by P.C. Standley (vol. 23).

Published by the Department of Botany, the resumed *Contributions from the United States National Herbarium* will be issued at irregular intervals, and Vol. 39: 1-128 (2000) is a "Catalogue of New World Grasses (Poaceae): I. Subfamily Anomochlooideae, Bambusoideae, Ehrhartoideae, and Pharoideae", by E.J. Judziewicz, R.J. Soreng, G. Davidse, P.M. Peterson (Smithsonian curator), T.S. Filgueiras, and F.O. Zuloaga (see related notice in this issue). Coping with the library's shelving space, budgetary, and acquisition requirements are but a few of the issues now being addressed, and electronic cybermethods will play a part in the research, archiving, storage, selection criteria, information gathering, and educational output of the library system in the museum. The Smithsonian Institution Libraries homepage URL is: <http://www.sil.si.edu/>, from which information on special collections, databases, electronic journals, online catalogs, services and programs can be accessed.

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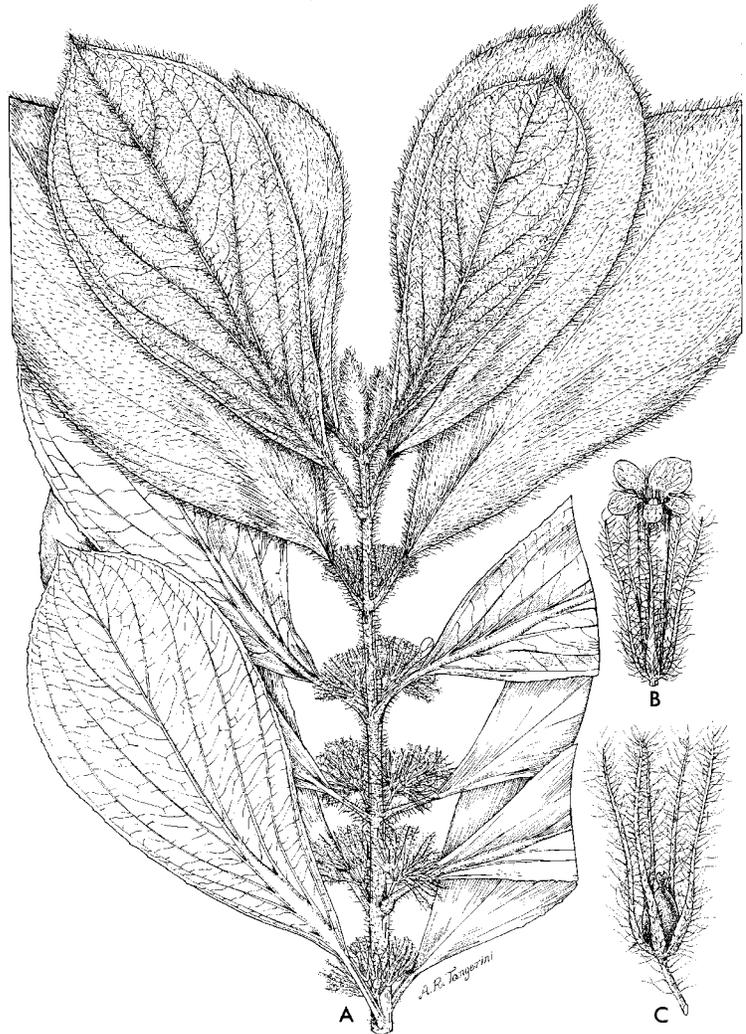
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Art by Alice Tangerini

***Besleria subulata* Nowicke**

The drawing of *Besleria subulata* Nowicke was published in *Brittonia*, Vol. 26, No. 1, January-March 1974 in "Two new species of *Besleria* (Gesneriaceae) from Panama" by Joan W. Nowicke. It represents not only a new species but also a new era for Tangerini's use of drafting film as a drawing surface. The habit and flower are drawn on drafting film; the calyx is on Bristol Board, adhered with the disreputable rubber cement. As Tangerini recalls the entire first draft was on Bristol Board but there was some change in the way the hairs had to be represented on the leaves so the switch was made to film.



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