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It is appropriate in this issue, the winter issue of 2003, that we celebrate a historic expedition that began two hundred years ago – not far from our new Botanical Society office in St. Louis. The Lewis and Clark expedition made their 1803 winter camp on the Mississippi River near the confluence of the Missouri River, up which they would journey the following spring. In the lead article of this issue, Rick McCourt and Earle Spamer describe the botanical legacy of the Corps of Discovery, including the more than 200 specimen sheets that survive today in the Herbarium of the Academy of Natural Sciences of Philadelphia.

Herbaria, more specifically the organization of specimens in herbaria, is the topic of a second feature article. Those of us who are not systematists may be surprised to learn that like in campus libraries there is more than one system of organizing specimens to make them readily available to researchers. Vicki Funk, of the National Herbarium at the Smithsonian Institution, gives us her opinion on optimal organization.

In another parallel with our campus library, where the paper copy is currently being supplemented by electronic forms, a similar transition is occurring with plant collections. In the book review section of this issue an electronic resource produced by the Academy of Natural Sciences Herbarium, *The Lewis & Clark Herbarium, Academy of Natural Sciences Digital Imagery Study Set*, is reviewed along with a non-technical “Plants on the Trail with Lewis and Clark.”

-editor

**Q.**  
How do you identify dogwoods (*Cornus* spp.) in a wetland?

**A.**  
By their distinctive bark! (rough, rough).  
Don Les

## The Botanical Legacy of Lewis and Clark: The Most Famous Collection You Never Heard Of

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If in the past two years you have read newspapers, watched television, listened to radio, or were semi-conscious at all, you have noticed a recent upswing, to put it mildly, in attention being paid to the Lewis and Clark expedition. Yes, the bicentennial of the expedition is upon us, and the public is discovering (or re-discovering) Lewis and Clark and everything they saw and did. Campsites are re-located based on mercury tailings left in privy sites (mercury was a key ingredient in the highly effective Dr. Rush's pills that the group took for a wide array of ailments), boats are launched by re-enactors, museum exhibits are set to travel the country, and the publishing industry has been reinvigorated. There are at least three books on Meriwether Lewis's dog, Seaman. What is less well known is the scientific story of the expedition. And even less widely known is the botanical legacy of the explorers, which comprises the richest trove of natural history specimens and knowledge of the Lewis and Clark journey.

### Botany Lessons in Philadelphia

Meriwether Lewis was no novice in natural history. He had grown up in Virginia and Georgia, hunting, fishing, and reading about the voyages of Captain Cook. He learned something of plants from his mother, Lucy Marks, who used herbs in ministering

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to ailing neighbors. As a soldier, he had traveled widely and knew the familiar plants and animals in the eastern United States. But he lacked the formal botanical training that he would need for the expedition. President Thomas Jefferson, a farmer and avid lover of plants, knew that Lewis needed a crash course in botany, and he knew just where Lewis could get it.

In May 1803, Meriwether Lewis arrived on the western bank of the Schuylkill River just outside Philadelphia. He had spent nearly a month in Lancaster, buying rifles and learning celestial navigation with Andrew Ellicott, an accomplished astronomer and mathematician. In Philadelphia he would buy yet more equipment and supplies, and just as important, study with several scientists to prepare for the journey. Philadelphia was the largest city in the nation at the time (population 45,000), home to America's first scientific association, the American Philosophical Society (APS), and the University of Pennsylvania (Penn). Lewis's tutors were affiliated with both institutions. Among Lewis's mentors was Benjamin Smith Barton, the first professor of Botany and Natural History at Penn, and author of the first botany textbook published in the United States. He taught Lewis how to identify, describe, and collect plants, including lessons in pressing and drying specimens. Lewis never described his methods, but we know from what he brought back that he must have carried some type of press with him. As far as we know, Lewis made nearly all the collections of plants, although it seems likely that we were given plants by other members of the expedition, and several specimens came from cultivated plants of the Native American tribes he encountered.

### A Botanical Bonanza

Lewis spent just over two years on the trail, and he collected plants all along the way. Jefferson had explicitly instructed him to make observations of the animals, plants, geography, and people he

encountered. Lewis put his Philadelphia training to good use and collected more than two hundred plant specimens. The exact number cannot be known, because several batches of plants that had been buried in caches along the Missouri River were lost in floods. He also commented on many more in the journals (Moulton 1986-2001), which were eventually published over the next century. However, these comments, while interesting historically, did not have the scientific impact of the collections themselves.



*Artemisia longifolia* Nutt., the long-leaf wormwood, collected by Meriwether Lewis on October 3, 1804. Lewis notes the taste, morphology and habitat in his brief on the dark-colored label, which is a portion of blotting paper with his field note: "flavor like the comomile radix perennial growth of the high Bluffs."

We can tally the existing specimens and briefly recount their long, strange trip. Lewis and Clark traversed approximately 8,000 miles, mostly along the Missouri and Columbia Rivers, with memorably difficult treks over the Rocky Mountains and a lengthy stay on the Pacific Coast at Fort Clatsop. The first dated specimen from the expedition was *Equisetum*

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*arvense*, collected in the late summer of 1804, on the Missouri River near Decatur, Nebraska. An original collecting tag, written by Lewis on red-purple blotting paper and now affixed to the herbarium sheet of this specimen reads, "growth of the sand bars near the banks of the river—taken the 10<sup>th</sup> of August 1804." (Fig. 1—herb sheet) The last dated specimen was collected September 14, 1806, just nine days before they returned to St. Louis. In all, they collected 232 plant specimens that survive today. Besides those lost in the flooded caches, we know that 60 were sent back to Thomas Jefferson early on, from Fort Mandan North Dakota, before the expedition shoved westward to the Rocky Mountains in 1805. From those 60, only 30 were accounted for by the time the rest of the plants arrived in Philadelphia in 1807. The missing 30 are today simply, inexplicably, lost.

In 1807 Lewis came back to Philadelphia to work with Barton and others who would help him to prepare a long-planned scientific volume to accompany publication of the journal narratives of the expedition. Of course, none of these was published in his lifetime. Barton did not follow up on helping Lewis prepare the natural history volume. But on the trip to Philadelphia, Lewis did set in motion events that would lead to the publication of the botanical results of the trip. Lewis was put in touch with Frederick Traugott Pursh, a plant collector for Barton and others up and down the eastern seaboard.

#### **A Collection Lost and Found**

Pursh was born the same year as Lewis (1774) in Saxony and was a highly trained and ambitious botanist. He was paid \$70 by Lewis to do what the captain could not: study the specimens, identify the new species, make drawings, and prepare the material for formal publication. This Pursh did after obtaining all the plants Lewis brought back in 1806, as well as half the shipment that Lewis had sent Barton from Fort Mandan. Pursh worked on the material for over a year and was apparently ready for Lewis to return and work up the results. But Lewis had been appointed governor of the Louisiana Territory and was entrenched in other activities. Pursh left the Lewis specimens with Bernard McMahon, a prominent Philadelphia horticulturist, who, along with Jefferson and others, was eagerly interested in the garden potential of plants collected in the Louisiana Territory.

Lewis never did return to Philadelphia. Pursh finished his other botanical work in Philadelphia (some would say he was fired) and left for New York in early 1809. Later that year Lewis committed suicide on the Natchez Trace in Tennessee. William Clark, co-leader of the expedition, returned to

Philadelphia to clean up loose ends of the expedition and arrange for publication of the journals and an accompanying volume on the scientific results of the journey. Clark instructed McMahon to hand the specimens over to Barton, who would complete the promised natural history book. This might have been the death knell of any scientific write-up for the collections, because Barton was ailing and distracted and never published on the collection. But Pursh still had his notes and drawings. And he had something else that he neglected to mention to William Clark: Pursh left Philadelphia with a batch of Lewis specimens comprising a quarter of the whole collection.

Some might call it theft, others an unapproved loan, but in any case it was a propitious pilfering for the literature of botany. Pursh took his materials to London and, with the patronage of Linnean Society co-founder, Vice- President, and botanist Aylmer Lambert, he wrote the two-volume landmark, *Flora Americae Septentrionalis*. In this book, Pursh discussed 132 of the Lewis and Clark specimens and recounted their habitats and other information provided by Lewis. He named several plants for the explorers, including *Lewisia rediviva* (Fig. 2 Curtis) and *Clarkia pulchella* (Fig. 3 Pursh), and gave Lewis the credit due him as an explorer and collector. Given the difficulties of the journey itself, and that Lewis and Barton never brought the scientific results of the expedition to a conclusion, it is rather remarkable that we have a botanical legacy to celebrate. Although some of the plants that Lewis collected had already been described from collections along the Pacific Coast by Spanish and English naturalists, most of their new plants were accounted for by Pursh in his landmark *Flora*. Certainly, western North America would have been explored and the species "discovered" by scientists (Native American's had discovered them centuries earlier, of course), but if it were not for the botanical vagabond Pursh, Lewis and Clark's botanical finds would have been footnotes to history.

Pursh eventually left London and Lambert's patronage and returned to North America, where in Montreal he died penniless in 1820. Lewis's collections stayed in England with Lambert until the gentleman died in 1842. His entire herbarium of some 50,000 specimens was auctioned off to the many bidders who met in his parlor that year. Among them was a young man who came to play a major role in the history of the collection, at least from the perspective of the United States.

Edward Tuckerman, later a famous lichenologist, was taking his Grand Tour of Europe when he chanced upon the Lambert auction and on a "venture" as he put it, bought a box containing what

the label said were “North American Plants.” He paid 5 pounds 10 shillings. He hit the jackpot. The box contained almost all the Lewis and Clark/Pursh plants, not to mention collections by Nuttall, John Fraser, and others. Another box purchased by William Pamplin contained 9 Lewis and Clark specimens mixed with hundreds of others.<sup>1</sup> These 9 ended up at the Royal Botanic Gardens at Kew. Tuckerman’s returned with his purchase to America and in 1856 sent the specimens to the Academy of Natural Sciences in Philadelphia for permanent curation.

So now the majority of the Lewis and Clark collections were all in the same city, but it would be another 40 years before anyone noticed. No one bothered to ask, and no one knew where the bulk of the Lewis specimens were kept. In 1896, Academy botanist Thomas Meehan was tipped off by Harvard’s Charles Sprague Sargent that Lewis’s specimens might be stored at the American Philosophical Society, across town from the Academy of Natural Sciences. Sure enough, a diligent search by McMahon turned up Lewis’s collections, still in the same bundles in which Pursh had left them. Barton, with whom Clark had left the expedition specimens, died in 1815 and left his scientific estate, including Lewis’s specimens, to the American Philosophical Society. No one seems to have been too interested in this historic collection, which sat in boxes undisturbed for 86 years.

Thomas Meehan eagerly set to work documenting the plants. He obtained grudging permission from the APS to send plants to B. L. Robinson and J. M. Greenman at Harvard for help with identification, and in just four months had written a paper describing all the Lewis plants and applying what were then the correct names (Meehan 1898). Meehan transcribed Lewis’s collection data, which was sometimes woefully brief. For example, plants were recorded as being from “the Great rapids of the Columbia” or “on the bluffs.” In short order, Elliott Coues, who had recently completed a revised edition of the Lewis and Clark journals, supplied a companion paper that used collection dates and his own knowledge of flora and fauna of the western states to pinpoint where the plants had been collected (Coues 1898). Interestingly, Meehan had noted that when he searched the Academy of Natural Sciences Herbarium (PH), he had come across a number of other Pursh-annotated sheets bearing Lewis collections. He recognized these as the Lambert purchase donated by Tuckerman, although he had no idea how they got to Philadelphia.

By the centennial of the Lewis and Clark expedition, the botanical results of their journey had been published and, after some circuitous travels, the

specimens had been reunited in Philadelphia (except for the 9 remaining at Kew). The APS loaned Barton’s portion of the collection to the Academy, to join the Lambert portion. All together the Lewis and Clark Herbarium comprises 222 specimen sheets, containing approximately 178 species. Today approximately 76 species names are based on the Lewis collections. There are many lectotypes and duplicates. The number is approximate because some fragmentary specimens are not identified to species and new research may revise the taxonomy.



In addition to the plants that Lewis actually collected, a few garden specimens grown Lewis’s seed collection have been found (A. E. Schuyler, personal communication). Almost all of the specimens Lewis collected are vascular plants, although he also gathered a moss, a liverwort, and a seaweed in the collection. Four state flowers and one state grass are represented.

All in all, given the rigors of the expedition itself, the travails of the principals and of the plants themselves, ferried to and fro stored in less-than-benign winters and summers of Philadelphia and London, the mere fact that we have specimens to celebrate is a bicentennial treasure that should not be overlooked.

**The Lewis and Clark Herbarium Today**

The Lewis and Clark Herbarium will be on tour during the Bicentennial, or at least small parts of it. Some three dozen plants will be on exhibit with several touring exhibitions from now until late 2006. St. Louis, Philadelphia, Denver, Portland, Great Falls, Richmond, Tacoma, Topeka, and Washington, D.C. are among the cities where specimens will be displayed. The general public can view them in these exhibits. More information is available online at the Academy of Natural Sciences web site: [www.acnatsci.org/museum/lewisclark](http://www.acnatsci.org/museum/lewisclark). For the schedule of exhibits, visit [http://www.acnatsci.org/museum/lewisclark/l&c\\_tours.html](http://www.acnatsci.org/museum/lewisclark/l&c_tours.html).

A number of excellent books have been published recently dealing with the plants, a few of which are listed below (along with references cited in the text). Also listed are several publications by the authors of this article (including a CD-ROM), on the history, preservation work, and modern environmental research being done using specimens from the collection.

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<sup>1</sup> There is uncertainty over whether a 10<sup>th</sup> specimen at Kew is also a Lewis specimen, but J. L. Reveal (personal communication) believes it to be a Nuttall collection. Precise numbers are hard to come by, even with a well-documented collection like that of Lewis and Clark.

## AN OPINION

### Down with Alphabetically Arranged Herbaria (and alphabetically arranged floras too for that matter).

A year or so ago we (the US National Herbarium) had several visitors from a large European Herbarium. A number of us took them to lunch and while we were eating, one of them asked me if we had the opportunity to re-arrange our herbarium how would we do it? It turned out they were moving their herbarium and it was a once in a lifetime chance to arrange it any way they liked. They were favoring the new APG system and wondered what we thought. They reasoned that if they re-arranged everything now and the system kept changing with families splitting and small segregates being recognized, etc. that the new system would soon be out of date and they would not be able to re-arrange again any time soon. I off handedly said, well, the APG system is fine and the later changes should not be a big problem because most of these moves are just a matter of re-naming the folders and putting them below the family in which they used to be included. So once they put the collections in the new system it would probably be easy to adapt to any additional changes. Their reply startled me, they said, oh no, that won't work at all, our herbarium is alphabetical so when a new family is recognized it sometimes has to be move far away from it's present location. I was stunned into silence (not an easy thing to do). I could not believe that a large important herbarium would be arranged alphabetically; especially when they had an opportunity to re-arrange it any way they wanted. I said as much but I was met by much opposition from the Europeans who said it worked perfectly well, that the herbarium was primarily for storage, and it made filing easier. I suppose, if a taxonomist works only in one family, if that family is never split up, and if the genera within the family are phylogenetically arranged, then it would be an OK arrangement although you would still have the problem of moving things around as the classification changed.

This exchange started me on a year long diatribe about the topic and I never passed up an opportunity to drag out my soapbox and give my opinion on it. Once when I did this, Marshall Sundberg (our editor) heard me and said, "Well if you feel so strongly about it why don't you write something for the Newsletter?" So, after some hesitation, I did. Before I begin let me say that I realize there are many different types of arrangements for herbaria. It is true some herbaria have the families and genera in phylogenetic order and others have them both in alphabetical order. However, many have some type

of hybrid system. For instance, the families might be in phylogenetic order but the genera within them are in alphabetical order. The fact that several types of systems exist does not affect my comments.

When considering the arrangement of both families and genera, a phylogenetic arrangement is, in my opinion, superior to an alphabetical system.

First, phylogenetic systems are much easier to use for identification purposes. Once a taxonomist arrives in the general area of the herbarium he/she can easily "crawl" through the surrounding bins and cases until the correct folder is found. Just imagine if you worked in a family, e.g. Compositae, with ca. 1700 genera and ca. 25,000 species. What it would be like if you tried to identify something when the genera were in alphabetical order! You would have to have a list of all the genera in the family and then eliminate the ones that were certainly not the right ones and then run all over the collections looking for what it might be. We have around 500,000 sheets of Compositae at US, can you imagine working with that amount of material in alphabetical order? Likewise if you have something that you are not sure of the family, it may be in some small one, if you have a phylogenetically arranged herbarium you may have a general idea where in the herbarium it should be located and you can go to that section to look for it.

Second, one learns when one files in a phylogenetic herbarium. I love filing in the herbarium because every time I file a sheet I look around a little and see its relatives. Conversely, one learns nothing from filing in an alphabetical herbarium, except the alphabet.

Third, working in a phylogenetic herbarium makes systematic work easier. For instance, right now I am interested in the tribe Arctoteae (Compositae), a small tribe, mostly from Southern Africa. I can stand in one place and access all of the species and the related taxa and tribes as I examine the results of our molecular data in comparison to the morphology and try to decide on tribal, subtribal, generic, and subgeneric limits. Otherwise I would be running all over from *Arctotheca* to *Platycarpha*. Even in a moderately sized herbarium this would be a problem.

Fourth, at every taxonomic level, order, family, etc., it is easier to work with undetermined specimens in a phylogenetically arranged herbarium. Fused corolla, parts in fives! It must be an Asterideae, off to that section of the herbarium. It's a comp, it has pales (receptacular bracts), off to that section of the comps! Parts in three's, downstairs to the pesky monocots.

Fifth, phylogenetically arranged herbaria are great for teaching. John Kress and I team-teach a class on the flowering plant families with Pat Herendeen (George Washington University) here in the herbarium. As we move through the families in the class we move through the herbarium. Would you teach your flowering plant class with the families in alphabetical order? Then why would you arrange your herbarium that way? If you conducted a class or seminar on a family or group of families, would you organize it alphabetically? Why should we be concerned about whether or not families are in a phylogenetic system if we don't arrange them that way in the herbarium?

Sixth, for many years I have said that the difference between lumpers and splitters is probably the herbarium where they work. If one works in an alphabetically arranged herbarium one must remember all new genera and one tends to want to leave everything where it is so it is easy to find. For example, many alphabetically arranged herbaria still have not broken up *Eupatorium* (Compositae) even through the changes have been around for many years and are nearly universally accepted. However, when one works in a phylogenetically arranged herbarium the new genera are usually located near by and you just have to look around a little. It is much easier to accept new ideas and new arrangements when they cause little disturbance and require little memory (especially as we get older). Are we to let reluctance to remember new generic names drive the science of taxonomy?

### Complaints about the Phylogenetic System

One large herbarium in the United States recently re-organized their Compositae holdings from a tribal system to an alphabetical one because it was "easier to file." This is the most common reason given for using an alphabetical arrangement. I do not believe this is justified. For one thing it is only marginally true, recently we taught a 14 year old volunteer to file in half a day. If she has a question, she asks. One looks up the family and checks the location, then one checks the first bin of the family for the genus list and finds the location of the genus. It is not that hard.

The second most frequent complaint I hear is that there is no single system and how does one decide which one to use? I am not proposing that what we do here at US is perfect, I will just use it as an example. We have what I call a 'modified' system for the flowering plants. We started with the D&H system but it has been changed over the years as new discoveries are made so it has migrated far from its original organization. As the science of systematics progresses we learn more and we make changes. One should pick a system, like the APG system, and change it as our knowledge

increases. Our herbaria should reflect our science. Certainly the larger the herbaria, the longer it will take to get around to making changes, but this should be our goal. Until you can move folders, one simply puts a sign on the case door that says "Family XXX currently housed in isle YY" so people can find it and still know where it really belongs.

While I am on the subject, let me annoy another group of my colleagues by saying that I don't like alphabetically arranged floras either for some of the same reasons listed above (I am not talking about local flora guides). I am using a flora right now that has the Araliaceae are next to the Arecaceae, I hate that, why not just put the fern families in as well, or the conifers, etc. who cares where it is in a volume if it is alphabetical? Within a family it is even worse, with closely related genera spread out over hundreds of pages, for instance in one recent flora *Cirsium* (Compositae) is stuck between *Cichorium* and *Conyza*; a thistle in between a dandelion, and an aster rather than next to other thistles! YUCK! Alphabetical floras are harder to use, you learn less, they are less useful for teaching, etc.

The last time I ventured an opinion on floras and their uses (Funk 1993) I received hate mail from one institution that thought I was damaging their ability to acquire funding, especially from NSF. So, for the record, this opinion is not intended to have any effect on anyone's ability to raise funds for the collections they manage, or the floras they publish, it is simply my opinion. If you have constructive criticisms or you would like to add to the list of "Why Phylogenetic Herbaria are Superior", I would love to hear from you.

Herbaria and floras are not storage, they are not just places to look up a name, they are places to do science and they should be arranged scientifically (phylogenetically) not artificially (alphabetically).

Vicki A. Funk  
US National Herbarium, National Museum of Natural History, Smithsonian Institution, Washington DC  
funk.vicki@nmnh.si.edu

Literature Cited  
Funk, V. A. 1993. Uses and misuses of floras. Taxon 42: 761-772.

Q.  
Why are Wolffia plants so difficult taxonomically?  
A.  
Because they're so 'rootless'!  
(Actually, I'm quite frond of them!)

Don Les

## News from the Society

### THE *AJB* INTRODUCES ELECTRONIC MANUSCRIPT SUBMISSIONS

The *American Journal of Botany* is proud to inaugurate online manuscript submission and author-tracking of manuscripts beginning October 1<sup>st</sup>, 2003. Authors can now submit their manuscripts using the link <http://ajb.allentrack.net/>, which is provided on the BSA webpage (<http://www.botany.org>) as well as the *AJB* webpage (<http://www.amjbot.org/>). AllenTrack is a product of Allen Press and has been customized to meet the needs of the *American Journal of Botany* and the membership of the *Botanical Society of America*.

#### With AllenTrack, authors can rapidly

- submit research articles, special papers, and book reviews
- check on the status of their work during the review process
- communicate with the editorial staff

#### With AllenTrack, reviewers can rapidly

- access and read or download manuscripts
- submit reviews electronically
- contact the editor or editorial staff

Online manuscript submission/author-tracking is rapid and efficient. It speeds the review process and allows authors to track the progress of their manuscripts during the review process.

#### What do authors need to do?

- starting Oct. 1<sup>st</sup>, 2003, authors can submit manuscripts through the AllenTrack site (<http://ajb.allentrack.net/>), which requires a modern browser with JavaScript and "cookies" activated
- authors will need to set up an account and provide a Login Name and Pass Word
- prepare manuscripts (with tables and figures) for submission using the most recent "Instructions to Authors"
- pdf versions manuscripts with all figures or diagrams are acceptable for review purposes
- go online at <http://ajb.allentrack.net/> and follow the simple instructions

#### What about regular mail submissions?

- starting Oct. 1<sup>st</sup>, 2003, AllenTrack is the preferred method for submitting research articles, special papers, or book reviews
- manuscripts submitted by other means must be accompanied by digital versions of all materials
- these materials will be entered into the AllenTrack system by the *AJB* staff as time permits, which will

cause delayed reviews

#### What if you have problems with your online submission?

- with AllenTrack, you can rapidly contact the editorial office
- submitting your work online is designed to be simple and convenient
- *AJB* staff will be available to answer questions or to assist you if problems arise

The *American Journal of Botany* is the flagship publication of the *Botanical Society of America*. It is currently ranked nineteenth (19) among 135 Plant Sciences journals listed by ISI.

### Botanical Society Represented at Texas Public Hearing Regarding Instructional Materials Submitted for Adoption by the State Board of Education under Proclamation 2001

On September 10, 2003, the Texas Education Agency held a public hearing regarding instructional materials submitted for adoption by the State Board of Education under Proclamation 2001. The turnout was impressive with over 160 Texas residents, including myself on behalf of the BSA and the Texas Academy of Science, signing up to give testimony. At issue, the adoption of science textbooks and a little known section of the adoption code that specifies that science texts must include examples of the strengths and weaknesses of scientific theories.

It was not surprising that many classic examples of evolutionary theory (Cambrian explosion, Darwin's finches, industrial melanism) and the origin of life (Miller-Urey) came under attack by supporters of Intelligent Design Theory and the Discovery Institute. The scientific community made a strong showing, especially the University of Texas, including a Nobel laureate for good measure. Each registrant was allowed three minutes to testify and the balance between pro and anti-evolutionary testimonials was about equal as were the opinions expressed by the state board members. Speaking order was determined by registration date and the anti-evolutionary sentiment was strong for the first 4-5 hours since those speakers were the first to register. In contrast, most of the scientists, myself included, waited until the last minute to register and didn't testify until late at night. A small matter, perhaps, but

indicative of the degree to which the anti-evolution movement is organized.

During the proceedings, the textbook publishers sat quietly in the corner nervously watching a high stakes game to win the multi-million dollar Texas contract. There were a number of books up for adoption and many had included weaknesses in their examples of evolution to comply with the adoption code. The board will make its final decision regarding which textbooks get adopted in November.

All in all, it was a circus-like atmosphere and a night I won't soon forget. There were many there, who like myself, were left wondering if it really was the 21st century.

BSA Statement:

Botanical Society of America

· 1637 Members in the US including 74  
Texans and 670 International Members

· Botanical Society of America's Statement on Evolution: [www.botany.org/newsite/announcements/evolution.php](http://www.botany.org/newsite/announcements/evolution.php). "Evolution represents one of the broadest, most inclusive theories used in pursuit of and in teaching this knowledge, but it is by no means the only theory involved. Scientific theories are used in two ways: to explain what we know, and to pursue new knowledge. Evolution explains observations of shared characteristics (the result of common ancestry and descent with modification) and adaptations (the result of natural selection acting to maximize reproductive success), as well as explaining pollen:ovule ratios, weeds, deceptive pollination strategies, differences in sexual expression, dioecy, and a myriad of other biological phenomena. Far from being merely a speculative notion, as implied when someone says, "evolution is just a theory," the core concepts of evolution are well documented and well confirmed. Natural selection has been repeatedly demonstrated in both field and laboratory, and descent with modification is so well documented that scientists are justified in saying that evolution is true."

Damon Waitt, Ph.D.

Senior Botanist, Lady Bird Johnson Wildflower Center

4801 La Crosse Ave. Austin, TX 78739

[dwaitt@wildflower.org](mailto:dwaitt@wildflower.org)

Dateline: Austin, TX, November 7, 2003.

In a lopsided vote, the Texas State Board of Education voted 11-4 in favor of 11 High School Biology Textbooks and foiled attempts to temper the teaching of the theory of evolution.

Huzzah!

## News from the Annual Meeting

### Attracting Graduate Students to Smaller Schools

Bruce Kirchoff

Department of Biology, PO Box 26170, University of North Carolina, Greensboro, NC 27402-6170

[kirchoff@uncg.edu](mailto:kirchoff@uncg.edu)

#### Background and Methods

The University of North Carolina at Greensboro is a mid-sized (12,500) urban university located in central North Carolina. With 25 members of the graduate faculty, the Department of Biology offers a terminal Masters degree. The department enrolls approximately 30 graduate students, of which approximately 25 are actively working on their degree.

During early spring semester 2003 a questionnaire was distributed to all enrolled Biology graduate students in the department asking them what factors had contributed to their decision to attend UNCG. The intension of the survey was to provide our Graduate Studies Committee with information that would help in recruitment. Twenty-four students responded to the questionnaire.

The results of the survey were presented as part of the Educational Forum at Botany 2003. Results of the discussion are incorporated into the recommendations at the end of this article.

#### Results

Student responses consisted of answers to multiple choice questions, and written comments in response to requests for clarification on their answers. In the narratives below I have tried to single out the most important factors identified by the students. I treat the four major questions one at a time.

#### Why did you apply for graduate school at UNCG?

The majority of responses to this question occurred in two categories. Students were either in Greensboro for other reasons (45%) or were looking for an M.S. degree (50%). For two students these were sufficient reasons to choose UNCG. Of the other students who were looking for an M.S., two were drawn by the overall quality of our program, while several others had some contact with a faculty member that swayed them. Finally, two students gave no reason other than seeking an MS for applying to UNCG.

Of those choosing UNCG because of their presence in Greensboro, ten offered written comments to explain why they made this choice. The most common comment among these responses was that the students choose UNCG because of its reputation as having the best Biology Department in the area.

#### **What sources did you consult before deciding to apply for admission?**

The three most consulted sources were the departmental web site (75%), web sites of individual faculty members (54%), and the Graduate School catalogue (38%). Combining the two types of web responses, we find that all but two students consulted our web site before applying (91%). Of these two students, one followed a faculty member to UNCG from another institution, and the other only answered one question on the whole questionnaire. In essence, 100% of the students who applied to admission to our graduate program visited our web site. Only three students consulted the department's recruitment brochure, and only one used Peterson's Guide to Graduate Education, where we regularly advertise.

#### **What source was most important in your decision to apply for admission?**

The single most important source was meetings with faculty (38%). Following this were the departmental web site (21%) and the graduate school catalogue (21%). Faculty web sites were only important to two students, and the department's recruitment brochure was only important to one.

#### **Why did you accept admission?**

Award of a teaching assistantship was the single most important reason for accepting admission (42%). This percentage jumps to 58% if we include research assistantships. Following in importance was a student's ability to pursue his or her education on private funds (33%). Tuition waivers, which reduce out-of-state students' tuition to in-state levels, were only slightly less important to prospective students (29%).

#### **Conclusions and Recommendations**

According to the results of this survey, each of the three steps in recruitment requires different procedures. Graduate students are initially attracted to the program because of their presence in Greensboro, or because they have had some contact with a UNCG faculty member. This suggests that advertising in local media, as well as having faculty interact with students at local colleges would

be a good way of attracting more students. Comments at the Forum support this recommendation. Joe Armstrong (Illinois State University) described seminars he presented at smaller local colleges. Preceding each seminar he would tell the students that if they came to ISU for a graduate degree they would find the same small school atmosphere that they enjoyed during their undergraduate degree. Several students applied! In addition to local advertising, maintaining a high-quality web site is also important. Essentially all of the students in our program consulted our web site before applying. In addition to maintaining a high quality departmental site, it is important to provide the resources so that faculty can set up and maintain individual web sites.

While considering admission a student seems to be most swayed by contact with faculty. To enhance applications it is important to facilitate these contacts. For instance, the Director of Graduate Studies could distribute student contact information to faculty as he receives it so that they can email or call the students directly. It is probably also good to arrange times when students can come to campus and meet with faculty members. The survey suggests that these actions could significantly increase the number of applicants.

Once admitted, there appear to be two factors that bring students to campus. The first is financial, and needs little elaboration. Students must be able to afford their course of study. The second reason is the students' intrinsic interest in pursuing their education. The best way to encourage this interest seems to be by arranging meetings between faculty and admitted students. If the students get the idea that they will easily be able to find a project that interests them, they are much more likely to accept admission.



Q. What do you call someone who studies duckweeds (Lemnaceae)?

A. A 'quack' taxonomist

Don Les

*In Memoriam:***Craig William Greene 1949-2003**

Craig William Greene, the Elizabeth Battles Newlin Chair in Botany at the College of the Atlantic (COA) in Bar Harbor, Maine, died on October 2, 2003 following a long struggle with pancreatic cancer. He is missed by family, friends, students, and colleagues for his enthusiasm, professional accomplishments, and friendship.

Craig was born in Geneva, New York and earned a B.S. from SUNY College of Environmental Science and Forestry, Syracuse, majoring in Forest Botany. He received an M. Sc. in Plant Taxonomy from the University of Alberta, where he worked on the taxonomy of *Smelowskia calycina* (Cruciferae) in North America under the guidance of John G. Packer. His Ph.D. was in Biology from Harvard University, his major advisor was Reed C. Rollins, and his dissertation was "The Systematics of *Calamagrostis* (Gramineae) in eastern North America."

After completing his Ph.D. in 1980, Craig went to COA where he was a revered teacher and active in many other parts of the institution. Craig's teaching gift came from his broad understanding of the natural world, clarity of expression, and compassion for students. In Alberta, in Cambridge, and at COA, he taught a wide range of courses. In more than two decades at COA, he did courses in Biology, Economic Botany, Introductory Botany, Genetics, Morphology and Diversity of Plants, Natural History, Plant Taxonomy, Plant Systematics, Population and Community Ecology, and Woody Plants. He especially enjoyed field courses and took students to many wonderful sites on Mount Desert Island (MDI). He chaired several committees at COA and, starting in 1996 was Associate Dean of Advanced Studies with administrative responsibility for the Masters of Philosophy in Human Ecology.

Craig's research focused on agamic complexes and the coastal flora of Maine. His work on high polyploidy, facultative agamospermy, and complex patterns of morphology in *Calamagrostis* (Poaceae) was a significant contribution to our knowledge of evolution in agamic complexes. His interest in *Calamagrostis* also included floristic treatments, such as *The Jepson Manual* (California), *Vascular Plants of British Columbia*, and *Flora of North America* (his treatment is in press). Craig's expertise in agamic complexes easily translated to *Amelanchier* (Rosaceae), which was particularly attractive because coastal Maine is a center of diversity of the genus. Craig got COA students



involved in getting chromosome counts, carrying out experimental pollinations, and assessing patterns of population variability in populations of MDI shadbushes. Craig held high standards in his research and publications. His science was founded on rigorous methodology and led to prudent conclusions that were succinctly presented and illustrated with high-quality graphics.

Not long after moving to Maine, Craig began working on its coastal flora, especially on MDI and in Acadia National Park. With students and collaborators, he carried out surveys of endangered plant species and freshwater aquatic vegetation. He worked for many years on the flora of the park, and a publication on this flora is in preparation. He was an ecological consultant for Acadia National Park starting in 1985 and a member of the Maine Endangered Plant Technical Advisory Committee (later called the Botanical Advisory Group) starting in 1987.

Craig balanced his commitment to his profession with devotion to family and friends. He also sustained passionate interests in fly-fishing, home-brewing, bicycling, and nature photography. He had a life-long love of fishing mountain brooks, especially those near the Adirondack cabin built by his great grandfather and grandfather in 1911. Many friends delighted in his high-quality home brews, which were also home-labeled with names such as Otter Ale and Badger Beer. His beer-brewing log records a total of 1535 gallons, with production extending into the last year of his life. In the late 1980s Craig took up bicycling. He helped organize and rode in the annual Tour de Cure fund-raising ride on MDI every year that it was held, including 2003. Except for this year, he always rode the 100-kilometer option in the tour, a beautiful ride near the shores of MDI. During his many botanical field trips, Craig took pictures. In the past couple of years he developed some of his favorites, and they reflect his love of the natural world and his creativity. There was a show of his photographs at COA in 2002.

The high esteem held for Craig was clearly evident on 21 May 2003 when the Botany Lab at COA was dedicated to him. The event packed an auditorium with COA faculty and staff, current and former students, family, as well as many professional colleagues and friends from near and far. For almost three hours, there was heart-felt gratitude, fond recollections, and praise for all Craig did for so many people. The words on the bronze plaque outside the Botany Lab summarize his stature: "His knowledge, excellence in teaching, and enthusiasm for the role of plants in human affairs have inspired two decades of students and beautified the landscape of our campus."

Craig was supported throughout his illness by family and many friends, and he died at home among them.

## Announcements Positions Available

### Plant Biology/Botany Assistant Professor Central Michigan University

The Department of Biology invites applications from broadly trained individuals for a tenure-track position at the rank of Assistant Professor, beginning August 2004 or before. Candidates must have a Ph.D. in a biological science, excellent verbal and written communication skills, and a strong commitment to teaching, research, seeking external funding, and service. Postdoctoral experience is preferred. Teaching responsibilities may include: general botany, field botany, courses in the individual's area of expertise at the undergraduate and/or graduate (M.S.) level, and contribution to the department's introductory program. Preference will be given to candidates that use current approaches to research field botany, plant systematics, ecology or conservation. Submit a letter of application, C.V., copies of all transcripts, statement of teaching philosophy and statement of research interests, and three letters of recommendation to: Plant Biology Search Committee, Department of Biology, Central Michigan University, Mount Pleasant, MI 48859. Review of applications will begin Nov. 1, 2003. Departmental information is available at <http://www.cst.cmich.edu/units/bio>. CMU, an AA/EQ institution, strongly and actively strives to increase diversity within its community (see <http://www.cmich.edu/aaeo/>).

### Missouri Botanical Garden Tibetan Ethnobotanist: Senior Herbarium Assistant

Assists curator in ethnobotanical field research and training in Tibet (NW Yunnan) and potentially elsewhere. Assists researcher in gathering field data, bibliographic and electronic data, analyzing and reporting data. Expedites and facilitates identification, labeling and storage of plant material entering herbarium. Work involves editorial assistance in writing scientific publications, reports and proposals. Performs various research activities according to the nature of the project. At present, the position is funded for 1.5 more years.

Qualifications include Bachelor's degree in ethnobotany, botany, anthropology, or related field. Master's degree and training and experience in Ethnobotany preferred, along with previous field and herbarium experience. Knowledge of computer database, GIS and statistical analyses preferred; population modeling helpful. Familiarity with ethnobotanical literature preferred. Ability and willingness for rigorous travel and work under difficult conditions for several months/year required. Speaking knowledge of Chinese/Tibetan would be helpful.

See <http://ridgwaydb.mobot.org/hrmweb/mbgjobs.asp#449>

Apply: <http://www.mobot.org/MOBOT/hrm/how.html>

Jan Salick, PhD  
Curator of Ethnobotany  
Missouri Botanical Garden  
Box 299  
St. Louis, MO 63166-0299  
USA

Q. Ever notice that *Verbena hastata* rarely possesses the hastate leaves for which it is so named?

Adaptively, these leaves have no obvious selective value.

The evolutionary moral of the story?

A. "He who *hastates* is lost."

Don Les

EVOLUTION AND SYSTEMATICS OF  
FUNGI  
UNIVERSITY OF MICHIGAN  
Professor/Curator

The Department of Ecology and Evolutionary Biology and the University Herbarium solicit applications for a tenured faculty position in evolution and systematics of fungi to fill the Wehmeyer Chair. We seek accomplished individuals whose primary research interests are in aspects of fungal evolutionary biology such as molecular evolution and systematics, evolution of adaptations, or evolution of development. We are also interested in individuals who place fungal evolutionary processes in ecological contexts by collaborating with plant and microbial ecologists in the department. Teaching may include a course in fungal evolution or diversity, and contributions to courses in evolution, systematics, and the individual's research specialization. The candidate will also work with a Collections Coordinator and provide scholarly leadership in the use of the Herbarium's outstanding research collection of fungi and lichens. Women and minorities are encouraged to apply. The University is responsive to the needs of dual-career couples.

To apply, send a *curriculum vitae*, statements of research and teaching interests and experience, evidence of teaching excellence, copies of publications, and names and addresses of three references to:

Chair, Fungal Evolution and Systematics Search Committee  
Department of Ecology and Evolutionary Biology  
830 N. University, Room 2019P  
The University of Michigan  
Ann Arbor, MI 48109-1048

Review of applications will begin 24 November 2003. The University of Michigan is a nondiscriminatory, affirmative action employer.

Assistant or Associate Professor  
Plant Evolutionary Biology

The Division of Biological Sciences ([www.biology.missouri.edu](http://www.biology.missouri.edu)) at the University of Missouri-Columbia invites applications for a tenure-track assistant or associate professor in plant evolutionary biology. The successful applicant will establish an active research program applying experimental and/or theoretical approaches to the study of plants evolution. We are particularly interested in individuals whose strengths include phylogenetic approaches and whose research complements that of our current faculty.

MU features a world-class interdisciplinary program in plant biology ([www.plantgroup.org](http://www.plantgroup.org)), extensive new greenhouse and herbarium facilities, and proximity to floristically diverse field sites. The Division offers highly competitive salaries, generous start-up packages, modern research laboratories and support facilities, and active graduate program with institutional support for students and postdoctoral associates, and a highly interactive faculty. Columbia, Missouri, is an attractive, progressive city with an excellent school system. We are firmly committed to fostering ethnic, racial, and gender diversity on our faculty and thus strongly encourage applications from women and members of groups underrepresented in science.

Applications should be sent by e-mail to: [ptevo@missouri.edu](mailto:ptevo@missouri.edu). Attach to the e-mail a single PDF (Adobe Acrobat) or Microsoft Word document that includes your curriculum vitae and statements of research and teaching interests. Copies of three publications and three letters of reference should be mailed to: John David, Chair, Division of Biological Sciences, 105 Tucker Hall, University of Missouri-Columbia, Columbia, MO 65211-7400. The review of applications will begin on December 1, 2003 and continue until the position is filled.

MU is an Equal Opportunity Affirmative Action Employer. To request ADA accommodations contact Robin Brueckner at (573) 882-6650 or by e-mail at [BruecknerR@missouri.edu](mailto:BruecknerR@missouri.edu)



Q.  
What do you get when you cross a wetland 'dock' (*Rumex* sp.) with *Cichorium* and *Carya*?

A.  
A hickory-chicory dock!

Don Les

## Evolutionary Developmental Biologist.

The Department of Biological Sciences ([www.fiu.edu/~biology](http://www.fiu.edu/~biology)) at Florida International University invites applications for a tenure-track position as Assistant Professor of evolutionary developmental biology who will develop a strong, extramurally funded research program, supervise doctoral students, and contribute to the teaching mission of the department. Ph.D. and postdoctoral experience are required. Preference will be given to applicants using plant, animal or fungal development to answer evolutionary questions. In-house facilities include a vivarium and core facilities for cell and tissue culture, electron and confocal microscopy, histology, and DNA sequencing (<http://www.fiu.edu/~biology/>). Send CV, three selected reprints, statements of research and teaching interests and the names and addresses of four references postmarked by **21 Nov 2003** to: Dr. Jennifer Richards, Evo-Devo Chair, Department of Biological Sciences, Florida International University, 11200 SW 8th ST, Miami, Florida 33199. *Florida International University (<http://www.fiu.edu>) is an Equal Opportunity Educator and Employer.*

## Award Opportunities

### Timothy C. Plowman Latin American Research Award

The Botany Department at The Field Museum invites applications for the year 2004 **Timothy C. Plowman Latin American Research Award**. The award of \$1,500.00 is designed to assist students and young professionals to visit the Field Museum and use our extensive economic botany and systematic collections. Individuals from Latin America and projects in the field of ethnobotany or systematics of economically important plant groups will be given priority consideration.

Applicants interested in the award should submit their curriculum vitae and a detailed letter describing the project for which the award is sought. The information should be forwarded to the Timothy C. Plowman Award Committee, Department of Botany, The Field Museum, 1400 South Lake Shore Drive, Chicago, IL 60605-2496 USA and received no later than 15 December 2003. Announcement of the recipient will be made no later than 31 December 2003.

Anyone wishing to contribute to **The Timothy C. Plowman Latin American Research Fund**, which supports this award, may send their checks, payable to The Field Museum, c/o Department of Botany, The Field Museum, 1400 South Lake Shore Drive, Chicago, IL 60605-2496 USA. Make certain to indicate the intended fund.

### Premio de investigación Latinoamericano Timothy C. Plowman

El departamento de Botánica en "The Field Museum" invita aplicaciones para el **premio de investigación Latinoamericano Timothy C. Plowman 2004**. Este premio de \$1,500.00 fue diseñado para apoyar a estudiantes y profesionales jóvenes en visitas al museo de Field y utilizar sus extensas colecciones de botánica económica y sistemática. Se les dará consideración especial a individuos de Latinoamérica y a proyectos en los campos de etnobotánica ó sistemática de plantas económicamente importantes.

Las personas interesadas en aplicar a este premio deberán proveer su curriculum vitae y una carta detallando el proyecto para el cual el premio se utilizará. Esta información debe ser enviada al Timothy C. Plowman Award Committee, Department of Botany, The Field Museum, 1400 South Lake Shore Drive, Chicago, IL 60605-2496 USA y ser recibida antes del 15 de Diciembre de 2003. El ganador del premio será anunciado antes del 31 de Diciembre de 2003.

Cualquier persona que desee contribuir al **Fondo de investigación latinoamericano Timothy C. Plowman**, el cual apoya este premio, puede enviar su cheque, pagadero a "The Field Museum, c/o Department of Botany, The Field Museum, 1400 South Lake Shore Drive, Chicago, IL 60605-2496 USA". Asegúrese de indicar el fondo al cual se destina su contribución.

Q.

Did you hear about the Aquatic Plant Biology student who fell face first into a patch of Marsh Fern (*Thelypteris palustris*)?



A.

He come out with a sori!

Don Les

## MORPH

### Molecular and Organismic Research in Plant History

#### MORPH evo-devo training grants

The MORPH Research Coordination Network provides support for cross-disciplinary training of undergraduate students, graduate students, postdoctorals, and early career faculty (assistant professors) between organismic (neobotanical and paleobotanical) and molecular labs. These visits range from a few weeks (to learn specific techniques) to a semester (to complete the equivalent of a lab rotation and take coursework not available at the home institution). This funding opportunity is open to all individuals with an interest in bridging the gap between organismic and molecular aspects of the evolutionary developmental biology of plants.

First Target Deadline: December 1, 2003  
Assistant Professors  
Postdoctorals  
Graduate Students

First Target Deadline: March 1, 2004  
Undergraduates

Evaluation of assistant professor, postdoctoral, and graduate student grants will begin on December 1, 2003, and applications will continue to be accepted until all annual funds have been committed. Applications for funding are evaluated by the steering committee of the MORPH RCN.

Application guidelines can be found at: <http://www.colorado.edu/eeb/MORPH/grants.html>

MORPH website features  
MORPH-hosted lab pages for faculty, postdoctorals, and graduate students  
Plant evo-devo literature, updated monthly: classic literature (1790-1993), recent literature (1993-today)  
Evo-devo jobs  
Upcoming plant evo-devo symposia  
Links to online journals

<http://www.colorado.edu/eeb/MORPH>

Q.  
How do you get *Potamogeton pectinatus* to flower?

A  
Just Sago

Don Les

## Jeanette Siron Pelton Award

The Pelton Award Committee is actively seeking nominations for the 2004 Jeanette Siron Pelton Award in Plant Morphogenesis. This prestigious award includes a \$1,000 prize and certificate given in recognition of outstanding contributions in the study of plant morphogenesis.

The award was established to commemorate the untimely passing of Jeanette Siron Pelton, by her husband and colleague at Butler University, John Pelton. Jeanette Siron Pelton was, in turn, botanist, morphologist, poet, philosopher and combined these talents in such unique harmony that John Pelton felt that her spirit would be best remembered by honoring others who had made particularly imaginative and creative contributions to science ... particularly plant morphology ... by investigators of approximately the same age as Jeanette Siron Pelton at her death. The award has been modified to broaden the scope of contributions and to allow consideration of exceptional candidates who are beyond the age suggested in the original award description.

The investigative approach used to produce such contributions may include molecular biology, cell biology, and/or organismal biology. We expect the award winner to attend Botany 2004 at Snowbird in Utah, and present a special address in the Developmental and Structural Section program. Previous award winners are R.H. Wetmore (1969), C.W. Wardlaw (1970), P.B. Green (1972), P.K. Hepler (1975), B.E.S. Gunning (1978), L.J. Feldman (1980), T.J. Cooke (1983), T. Sachs (1985), S.D. Russell (1988), E.M. Lord (1989), R.S. Poethig (1993), E.M. Meyerowitz (1994), S. Hake (1996), D. Kaplan (1998), B. Scheres (2000) and K. Niklas (2002). Although special consideration has been given to younger investigators (under 40 years of age) in accordance with the circumstances of the bequest, the age limit may be waived for particularly noteworthy candidates. The award is not restricted as to sex, nationality, or society affiliation of the recipient. A nominating letter should describe the nature of the nominee's contributions to the field of plant morphogenesis and include full citations of key papers or books relevant to the nomination. Send materials to Dr. Darlene Southworth, Chair, Pelton Award Committee, Department of Biology, Southern Oregon University, Ashland OR 97520 (e-mail: [southworth@sou.edu](mailto:southworth@sou.edu), Fax 541-552-6415). Review of nominees will begin February 15, 2004.

## Special Opportunities

### The Marie Selby Botanical Gardens Spirit Collection: A Valuable Botanical Resource



The Marie Selby Botanical Gardens (MSBG) announces the completion of an NSF funded project (NSF DBI-0138615) to curate its Spirit Collection of vascular plants. The MSBG Spirit Collection is the largest in the Western hemisphere and the second largest in the world (after Royal Botanic Gardens, Kew). The collection is comprised of more than 26,000 vials of flowers or entire small plants of Orchidaceae (24,000), Gesneriaceae (2000), and Bromeliaceae (300). The preservative used is a combination of 70 parts denatured alcohol, 27 parts water, and 3 parts glycerin. Important collections in the Spirit Collection are from Carlyle Luer, G.C.K. Dunsterville, Alexander Hirtz, and Calaway Dodson.

The NSF grant allowed for the purchase of plastic storage containers and for the replacement of metal caps and poor quality liners. Bar codes were applied to the bottles for inventory and tracking purposes. More than 450 type specimens were identified, a list of which is available on the internet at: <http://www.selby.org/research/herb/types.htm>.

Preserving plant specimens in spirit fluids maintains the flowers in a form as close-to-nature as possible, which is critical to understanding the nuances of orchid taxonomy and pollination. It obviates the need to rehydrate flowers from herbarium specimens, especially type specimens that may have only one or few flowers, and thus better protects herbarium specimens for future types of analyses. Spirit preservation also provides a method to preserve voucher specimens resulting from scientific studies and it provides a resource to more fully understand the morphological range and geographical distribution of a species.

Selby Gardens encourages the use of its Spirit Collection and provides low-cost visitor quarters to botanists wishing to consult the specimens. Limited, short-term specimen loans are also available. Complementing the Spirit Collection at Selby Gardens are 9000 greenhouse accessions, 3300 display and grounds accessions, 88,000+ herbarium specimens, including 27,000 orchids, 8000 bromeliads, and 1700 type specimens. The Selby Gardens Research Library has 6500 volumes (including a 543-volume rare book collection), 300+ active periodicals, and a microfiche collection of many early botanical references.

For more information, contact Bruce Holst, Research and Conservation Department, Marie Selby Botanical Gardens, 811 South Palm Avenue, Sarasota, FL 34236-7726. Tel: 941-955-7553 x 312. E-mail: [bholst@selby.org](mailto:bholst@selby.org). Web site: [www.selby.org](http://www.selby.org).

Figure. Spirit collection of *Dendrobium vagans* (Orchidaceae) at the Marie Selby Botanical Gardens. (Photograph by Bruce Holst)

Q. What game do water plantain (*Alisma triviale*) collectors like to play?

A. *Triviale* pursuit!

Q. Where do you find 'Sheep-laurel' (*Kalmia angustifolia*)?

A. In a *baaaaa-g*, of course.

Don Les

## Symposia, Conferences, Meetings

### SECOND CALL FOR ABSTRACTS

**SEEC 2004**  
**SOUTHEASTERN ECOLOGY AND**  
**EVOLUTION CONFERENCE**  
GEORGIA INSTITUTE OF TECHNOLOGY  
ATLANTA, GEORGIA, USA  
5-7 MARCH 2004

**FREE REGISTRATION AND ABSTRACT**  
**SUBMISSION REGISTRATION AND ABSTRACT**

SUBMITTAL DEADLINE: 31 JANUARY 2004

We invite all **undergraduate**, **graduate**, and **post-doctoral** researchers in ecology, evolution, environmental sciences, limnology, forestry, fisheries, wildlife, marine sciences, and other related fields to submit abstracts for either oral or poster presentations at the 1st Annual Southeastern Ecology and Evolution Conference (SEEC) to be held March 5-7, 2004, at the Georgia Institute of Technology in Atlanta, Georgia. SEEC is a product of similar conferences currently held in the northeast (NEEC) and the midwest (MEEC). These conferences are professional meetings intended for students in the environmental sciences to present their research to their colleagues in a comfortable, fun, and low stress environment. Such events are designed to encourage new friendships within our field and to share newly developed research ideas for feedback. While we expect most SEEC participants to be from the Southeast, we encourage and welcome all interested individuals to submit abstracts and/or attend.

SEEC 2004 homepage:  
<http://www.biology.gatech.edu/SEEC/SEEC.html>

To encourage attendance, registration is **FREE** and covers meeting attendance, two continental breakfasts, snacks, coffee, and a t-shirt! If funds are available, awards for both the best oral and poster presentations will be given. There will also be tables from sponsors, including publishers, supply companies, and other organizations (see our web site for a complete list of sponsors). The registration and abstract submission deadline is January 31, 2004, and may be completed at the following web site:

Registration: <http://www.prism.gatech.edu/~aw181/SEEC/Registration.htm>

We are pleased to announce that our keynote speaker is Dr. Mark E. Hay, Teasley Professor of Environmental Sciences at the Georgia Institute of Technology. Dr. Hay is one of the foremost marine community ecologists of our time, and since 1999, he has been instrumental in the development of the new Center of Aquatic Chemical Ecology at the Georgia Institute of Technology.

The Georgia Institute of Technology is located in midtown Atlanta, Georgia and is convenient to numerous hotels, restaurants, music venues, and bars (to see what's happening in Atlanta, check out these sites [www.accessatlanta.com](http://www.accessatlanta.com), [www.citysearch.com](http://www.citysearch.com), and [atlanta.creativeloafing.com](http://atlanta.creativeloafing.com)). We have reserved rooms at three reasonably priced hotels near the university at special rates - so reserve your room before they are gone. Additionally, Atlanta has a subway/bus system for easy travel within the city. Registration, abstract submission, travel/lodging information, and contact information may all be found at the SEEC web site:

SEEC 2004 homepage:  
<http://www.biology.gatech.edu/SEEC/SEEC.html>

Please forward this message to interested students! SEEC flyers are also available on the SEEC homepage (<http://www.biology.gatech.edu/SEEC/SEECflyer.pdf>) and we strongly encourage its posting in conspicuous locations!

We look forward to seeing you at the Georgia Institute of Technology for the 1st Annual Southeastern Ecology and Evolution Conference this March!

Alan Wilson - [alan.wilson@biology.gatech.edu](mailto:alan.wilson@biology.gatech.edu)  
SEEC Organizing Committee Chair

Q.  
Why did the student excavate the bog?

A.  
For Peat's sake!

Q.  
Why are achenes so slow?

A.  
Because they're never in a rush (*Juncus* spp.)!  
Don Les

## Maize Genetics, Genomics & Bioinformatics Workshop

For Plant Genetics Graduate Students, 14  
Openings for U.S. Students  
CIMMYT International Research Center,  
Mexico, March 7-11, 2004  
Precedes Maize Genetics Conference,  
Mexico City, March 11-14, 2004

### Organizers

Torbert Rocheford, Department of Crop Sciences,  
University of Illinois  
Sarah Hake, Plant Gene Expression Center,  
USDA-ARS, U.C. Berkeley  
Dave Jackson, Cold Spring Harbor Laboratory,  
New York  
Jean-Philippe Vielle-Calzada, Department of  
Genetic Engineering, Carretera Irapuato-  
Len, Irapuato, Mexico

### Lecture Topics & Instructors

- The Maize Organism, Development of the Plant  
Sarah Hake & Dave Jackson
- Mutants and Their Analysis  
Bob Schmidt & Becky Boston
- Meiosis & Recombination, Classical & Molecular  
Maps  
Lisa Harper & Anne Sylvester
- Transposable Elements & Their Uses  
Hugo Dooner & Jean-Philippe Vielle-  
Calzada
- Quantitative Trait Locus Mapping, Association  
Analysis  
Torb Rocheford & Ed Buckler
- Maize as a Model for Genetic Study of the Cereals  
Toby Kellogg & Susan McCouch

Each of the lecture topics will be accompanied by hands-on computer sessions involving bioinformatic exercises and /or use of genomic databases (Maize GDB, Gramene) led by Doreen Ware & Trent Seigfried.

Small group discussions will accompany each lecture topic. After lecture there will be break out groups into computer lab and discussion sessions to keep numbers small.

There will be evening research seminars and poster sessions.

Generous funding from the NSF Plant Genome Program, Biological Sciences will provide full support for all travel and workshop costs for 14 U.S. graduate students. This funding is for U.S. citizens only, and is limited to graduate students. (U.S. citizens studying in another country are eligible to apply).

There will be an equal number of graduate students/very early career scientists from Africa and Latin America participating in the course. These participants are being invited (there will be not be an online application process) and will be supported by other sources, including generous support from Rockefeller Foundation.

It is expected that the students selected for this workshop will also attend the Maize Genetics Conference, which will be announced shortly. However funding from this program will not cover costs of attendance at the Maize Genetics Conference.

### Application Process

We ask students to apply online now since we will need to request references. The latest that applications will be received at <http://www.maizegdb.org/mmbw.php> is December 1, 2003. You will be required to provide: Thesis project topic/area; an essay (500 words or less) on why the course would be beneficial to your research goals; the email addresses of three references, and other information.

There will be an initial screening and those receiving further consideration will have two references contacted. Successful applicants will begin to be notified hopefully by December 22, 2003.

Selection criteria will be based on who will benefit the most from the course and academic and research qualifications. Graduate students working on a related species or considering working on maize are welcome to apply.

If you are selected and accept, you will need to complete some online exercises using Maize GDB and Gramene in advance of the course. The purpose is to familiarize all students with these databases and related exercises, and to determine if special sessions and/or grouping of students are desired to accommodate different levels of expertise.

Selected participants will bring a poster on their research, regardless of stage of the research. The poster format will be identical to that of the Maize Genetics Conference.



## INVASIVE SPECIES: THE SEARCH FOR SOLUTIONS

AIBS 2004 Annual Meeting. 16 - 18 March.  
Washington DC.

Register online at <http://www.aibs.org/annual-meeting-2004/>; early registration closes 2 March 2004. Poster abstracts may also be submitted at the above URL; poster submissions close 16 February 2004.

Plenary speakers, panel sessions, and informal discussion groups at the 2004 AIBS Annual Meeting will approach the topic of "Invasive Species: The Search for Solutions" from the perspective of one or more of the meeting's cross-cutting themes, including: what makes a species "invasive"; research questions and tools; aquatic and terrestrial issues; economics; public policy; education; public health; prevention and remediation; international issues; and local initiatives. Each plenary speaker will couch his or her talk with reference to invasive species issues involving particular major taxonomic groups: plants, vertebrates, invertebrates, and microbes.

Attendees will hear distinguished plenary speakers and panelists present synthesizing lectures from the forefront of their fields, then will join those speakers and other equally notable scholars in panel sessions and informal discussion groups. Speakers include: Ann Bartuska, The Nature Conservancy, "Abating the Threat of Invasive Species: Linking Science and Policy"; Richard Mack, Washington State University, "Prevention and Remediation of Plant Invaders"; Stephen Morse, Columbia University, "Emerging Infections: Microbial Invaders Discover New Territory"; David Lodge, University of Notre Dame, "Bioeconomic Risk Analysis of Invasive Vertebrates and Other Species"; Andrew Dobson, Princeton University "Zen, Parasites, and the Art of Alien Invasion"; Daniel Simberloff, University of Tennessee, "Invasion Biology." Additional speakers include: Cynthia Kolar, U.S. Geological Survey; David Pimentel, Cornell University; Fred C. Dobbs, Old Dominion University.

All sessions take place in the Westin Grand Hotel, 2350 M St. NW, Washington DC, 20037 (three blocks north from the Foggy Bottom Metro Station, on the edge of Georgetown). Early registration prices for the 3-day meeting are \$200 for individual members of AIBS; \$250 for non-members (includes automatic one-year AIBS membership); \$160 for government employees; \$150 for educators; \$130 for students. Early registration closes 2 March 2004. Attendance is limited—register early! For more

information, contact [rogrady@aibs.org](mailto:rogrady@aibs.org).

—  
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## Northeast Ecology and Evolution Conference (NEEC)

University of Connecticut, Storrs, March 26-28, 2004.

The Ecology and Evolutionary Biology department at the University of Connecticut will host the second Northeast Ecology and Evolution Conference (NEEC) this Spring. Entirely organized by graduate students, NEEC 2004 will feature talks and posters by grads, post-docs, and upper -level undergraduates from many fields of biology, including the botanical sciences. The inaugural NEEC, hosted by Rutgers University in 2003, attracted participants from more than 40 institutions.

The Saturday science program will be followed by a banquet featuring a Keynote Address by Dr. Michael Soule, Professor Emeritus in Environmental Studies, University of California, Santa Cruz. Dr. Soule is a founder of the Society of Conservation Biology and the Wildlands Project, and he is often referred to as "The Father of Conservation Biology."

Access will be provided during the conference to the University's recently opened Systematic Research Collections facility, the new home of the George Safford Torrey Herbarium.

NEEC 2004 represents a fantastic networking opportunity for grad students, as well as a chance to introduce the next generation of biologists to the research of their peers.

Conference information, including registration materials and the call for papers, can be found at [www.eeb.uconn.edu/NEEC/](http://www.eeb.uconn.edu/NEEC/).

Chris Martine  
Co-chair, NEEC 2004  
Ecology and Evolutionary Biology Graduate Program  
University of Connecticut  
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Phone: 860-486-4156  
Fax: 860-486-6364

## Selby Gardens to host 2<sup>nd</sup> International Orchid Conservation Congress

May 17-21, 2004

More than 200 scientists and orchid enthusiasts from around the globe will convene at the Marie Selby Botanical Gardens in Sarasota May 17-21, 2004 for the International Orchid Conservation Congress II. This conference is a gathering of the Orchid Specialist Groups of the Species Survival Commission.

"The Conservation Balance" is the theme. The keynote speaker will be Dr. Stuart Pimm, Doris Duke Professor of Conservation Ecology at Duke University. Chairing the conference is Selby Gardens' Manager of Systematics Dr. Wesley Higgins. Higgins represented Selby Gardens at the first International Orchid Conservation Congress in Perth, Australia in 2001.

This Congress is an important gathering of world orchid conservationists to review progress on the goals set at the first Congress: that by 2010, 90% of threatened orchids will be in ex situ collections, 50% of threatened orchid taxa will be in recovery programs in situ, no orchid taxa will be threatened by unsustainable harvesting, every child will be aware of plant diversity, and the Orchid Specialist Group will be funded to track the implementation of these conservation actions. "This will be a vital opportunity to discuss conservation techniques with colleagues from around the world," says Higgins.

Registration brochures have been mailed to universities, research institutions and orchid societies throughout the U.S. and abroad. Area orchid enthusiasts, even beginners, also are encouraged to participate. "This is a great opportunity to meet the Who's Who of the orchid world, and while many of the talks are scientific, some are not," says Dr. Higgins. A discounted conference registration fee of \$295 is being offered through Dec. 31, after which it increases to \$350.

For more information, visit [www.selby.org/iocc](http://www.selby.org/iocc) or contact Dr. Higgins at (941) 955-7553, ext. 311.

## 13th International Congress of Photosynthesis

August 29 to September 3, 2004

Palais des congrès de Montréal, Québec,  
Canada

The International Congress of Photosynthesis offers a special opportunity, once every three years, to meet with top international photosynthesis researchers from government, industry and academia with a vast range of interests and expertise. This meeting will increase the exposure of your work, expand your perspectives, and most importantly, allow you to interact with your international peers.

The 13th International Congress of Photosynthesis to be held in Montréal from August 29 to September 3, 2004 continues this tradition with an exciting program designed to stimulate the imagination and facilitate interactions between students, postdoctoral fellows, research scientists and principal investigators from all over the world. Come and be part of the synergy; the conference promises to excite, invigorate and assist in the formation of new ideas, and new collaborations.

This meeting will provide a forum for researchers investigating all aspects of photosynthesis and will highlight cutting-edge progress toward our understanding of the most critical energy conversion process on Earth. Research on the scale of single molecules and femtoseconds will be discussed together with research encompassing the entire biosphere and millions of years, and everything in between. Discuss the latest discoveries with key international researchers in your own research area as well as experts in all other aspects of photosynthesis.

For additional information contact:  
Secretariat: Opus 3 inc.  
Tel: (514) 395-1808, Fax: (514) 395-1801  
Email: [info@opus3.com](mailto:info@opus3.com)  
[www.uqtr.ca/ps2004](http://www.uqtr.ca/ps2004)



© Tourisme Montréal

## Can you help out?

John Herr, at the University of South Carolina, would like to know how many free-standing herbaria there are in the Southeastern U.S. (but let's expand it to the whole country.) By "free-standing herbarium" he means a herbarium housed in a building which houses no unrelated entity. If in that building there are offices, classrooms, laboratories, etc., not strictly connected to herbarium function, then the herbarium is not free-standing.

He notes that the University of North Carolina Herbarium, now at the Botanical Garden, probably fits this description, but are there any others?

The reason for his inquiry is that that he "has at least a ghost of a chance of getting such a building for the A. C. Moore Herbarium here at USC" and he would like to be able to add more documentation to his proposal. If you have any information, please let him know at: [herr@mail.biol.sc.edu](mailto:herr@mail.biol.sc.edu).

-editor

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**Origination of Organismal Form**, G. B. Müller and S. A. Newman, eds. 2003. ISBN 0-262-13419-5. (cloth, \$ ). MIT Press, Cambridge, Massachusetts. 332 pp. — This collection of seventeen essays, the second installment of the self-designated Vienna Series in Theoretical Biology, strives to go “beyond the gene in developmental and evolutionary biology.” In a series of papers both theoretical and experimental, an international panel of authors does some heavy lifting as its members try to generate a new set of rules for discussing and understanding morphology and morphogenesis. No, this is not light summer fare. Expect instead a full Central European menu that includes meat with gravy, copious potatoes, and thoroughly cooked cabbage. Chew carefully, and allow time for digestion before hitting the sack or you’ll wake up in a sweat. The typical essay is chock full of difficulty; readers require easy mental access and integration in rapid succession to cascades of epistemologies both reductionist and anti-reductionist. Determination, atavism, hierarchy, modularity, novelty, polyphenism (and more!) are brought to bear on problems of control and threshold, balance and perturbation, oscillation and organization. What’s all the fuss about? It seems the authors are in it to erect some new and all-encompassing Theory of Biology, one that supposedly transcends contemporary thinking about evolution. Serious stuff. Perhaps radical. Apparently phylogenetics has become a thing of the past. One author describes it among other failures of contemporary science and writes, “An example of failed great expectations in biology is that we could find a tree of relationship among all organisms based on their descent, including the relationships of molecular sequences.” (Note to self: Don’t cite this chapter in next DEB proposal to National Science Foundation). Creationists will lap up the anti-Darwinist message (natural selection can’t possibly account for form innovation) that permeates the book. Concomitant with this, one author poses a perspective that allows for extraterrestrial input into the inexplicable vagaries of life that we earthling scientists try to circumscribe. Another contributor assumes that “certain higher order phenomena cannot even in principle be fully explained by physics, but require additional principles that are not entailed by the laws governing the basic constituents.” Rats! Just as I was finishing that lecture for my undergraduates on the naturalistic philosophy! Not to worry though. This book isn’t kid stuff, but a volume to torture graduate students with. Their heads will swim with its opulent ontology, pondrous prose, heavy heuristics, loaded language, and arcane agenda. We professors can wow them with our insights into the impressive sounding section headings like “Origination and Evolvability” or “Problems of Morphological Evolution,” as long as we keep our focus on the Animal Kingdom. Tetrapod

limbs, vertebrate segmentation, metazoan body plans, gastrulation, biramous appendages, fly wings, cephalopod eyes, mammary glands, and other cool stuff are discussed. But barely a mention of plants. Arabidopsis didn’t even make it to the index. Maybe as botanists we needn’t concern ourselves with all the high falutin’ ideas presented here. News flash: It seems that the “origination of organismal form” doesn’t include our organisms. Botanical ideas? Linneaus and Goethe appear on p. 53 as “idealistic” conceptualizers of homology. But no recent thinkers on morphogenetic theory in plants appear anywhere in the book. Whether or not they agree with its contents, readers will find lots to think about, a wide range of ideas (excluding plants, that is), and an intriguing bibliography in this volume. But to paraphrase Darwin, the study of morphology could make a sane person insane. We can only guess what he thought about metaphysics. - Samuel Hammer, Boston University.



**Tree Bark: A Color Guide.** Vaucher, Hugues, translated and edited by James E. Eckenwalder. 2003. ISBN 0-88192-576-4 (Cloth \$ 39.95) 260 pp. Timber Press, The Haseltine Bldg., 133 S.W. Second Ave., Suite 450, Portland, OR 97204. There are now two books totally devoted to the subject of tree bark. One cannot write a review without comparing both. The earlier book, *Bark: The Formation, Characteristics and Uses of Bark Around the World*, (ISBN 0-88192-262-5. Timber Press, 1993) is by Ghillean and Ann Prance with extraordinary photography by Kjell B. Sandved. Photographs in *Tree Bark: A Color Guide* are all by Hugues Vaucher of the Swiss Dendrological Society. This is more technically oriented and goes more deeply into the physiology of tree bark. The chapters are, first, “The Diversity of Tree Bark” in which the author shows line drawings of eighteen major types of bark. Trees can be partly classified in this way, although the author points out, as trees mature their bark may end up as quite a different type than it was when younger. The second chapter, “The Structure, Function, and Physical Properties of Bark”, written by Ladislav J. Kucera and Livia Baramin,

specialists from the Forest and Wood Research Institute of Switzerland, is a reasonably technical discussion of this subject with a number of cross-sections illustrating the various outer layers such as epidermis, periderm, and cork, in relation to the vascular cambium and secondary xylem. There follow a series of photographs of partial cross-sections showing bark structure and then microscopic photographs of transverse sections of wood. A table shows statistics for the physical properties of bark for twenty-five species: density, ash, water content, and proportion of bark to wood. Chapter 3, "The Ethnobotany of Bark" lists some of the major human uses of bark: for fiber, absorption filtering, tannins, dyes, spices, incense, medicinal properties, and the economically important cork. The heart of the book is Chapter 4, "The Barks" with 550 excellent photographs of tree bark of more than 440 species, some showing comparisons of younger and older bark in a given species. The photographs are arranged alphabetically by genus and species. Almost all of these pictures were taken in botanical gardens or parks where bark differences are probably more clearly displayed than they would be in the wild. The book ends with a glossary defining the specialized terminology used, especially in chapter 2, a short bibliography, and indexes to scientific and common names.

This is certainly a book for beginning and intermediate botanical and forestry students and for botanically oriented laypersons to increase their knowledge of trees. As a librarian though I would recommend the book by Prance, *Bark...* to an ordinary person wanting to learn more about the subject. Here the photographs, many of them extraordinary close-ups, are integrated with the very readable text, that relates the whole subject to its uses, by people. As Prance writes: The book starts with chapters on "The Structure and Function", "Field Identification", "Photosynthetic Bark", and "Bark Ecology". Then as Prance writes "...human ingenuity has found many uses for bark. When good material is available people tend to make use of it." (p.126) The remainder of the book discusses and illustrates some of these uses: "Latexes", "Resins", "Bark Medicines", "Flavors", "Tannins", "Cork", "Bark Canoes", "Fiber, Fuel, Mulch, and Other Uses of Bark". The final two chapters are "Bark as Camouflage and Food", and "Bark Flora and Dwellers" with wonderful pictures especially of insects which have adapted to tree bark for disguise and protection. There is an index to scientific names and a general index. If you are interested in the subject, you would read *Bark...* to get excited about it and then follow it up with *Tree Bark* to learn more facts about it.

Mary M. Walker, librarian, New England Wild Flower Society, Framingham, MA.

**Perfect Planet, Clever Species: How Unique Are We?** William C. Burger, 2003, ISBN 1-59102-016-6 (alk. Paper, Hard Cover, price not indicated on book, \$29.00 on publisher's website), 345 pp., Prometheus Books, 59 John Glenn Drive, Amherst, New York 14228-2197.

Curiosity is a human trait. To find another civilization in the universe is one of the fascinations of those curious humans called scientists. Depending on the definition of 'civilization', human civilization is only about 10,000 yrs old. With the advent of high-powered telescopes, we know that there are stars and their 'solar systems' much older than Earth, so is it possible that an older and wiser civilization exists somewhere out there! Fascination has crowded our minds since childhood when we learned to rhyme Jane Taylor's "Twinkle, twinkle, little star..." After all, most of us have learned through TV that Martians with two antennae visit the earth from time to time. Eventually a Search for Extraterrestrial Intelligence (SETI) program was set up and a message from earth sent to 'whomsoever it may concern'. That satellite has now left our solar system and is still going onwards. Meanwhile the SETI program has been cancelled.

After the 'big bang' creation of the universe, it took billions of years for earth to become suitable for the origin of life. Since carbon is an essential element of life, some scientists proposed the idea that, during the early history of earth, life was injected by extraterrestrial objects such as carbon-containing meteorites from other planets. Such interpretations started the search for life on other planets without any convincing results as yet.

Burger's methodical and fascinating book acts as a pin to burst the balloon of scientists' imagination about the existence of life on some other planet of the universe. This book explains lucidly the origin and make-up of the universe. It explains in simple language the characteristics of various planets and how they differ from each other. Burger tells us why the earth is unique in being the only planet in our solar system able to create an environment for the start of life. Taking a cue from the children's story of Goldilocks, astronomers have analyzed that the earth is in the 'Goldilocks orbit.' At this optimum distance from various planets and the sun, earth receives just the right amount of heat and light. The evidence for the simplest form of life, such as *Archaea*, is about 3.5 billion years (byrs) old. These ancestral forms of present day life were very "fit-forms" as they could survive the early hostile environments.

Burger tells the fascinating story of evolution from simple one-celled organism to complex multicellular

plants and animals. After all, why does evolution take place? 'Natural Selection' and 'Survival of the Fittest' are two forces which allow evolution to go on. Environmental changes do not stop the evolutionary process as extinction and evolution are interdependent in the biotic kingdom. Even catastrophes such as the extraterrestrial impact about 65 million yrs ago did not stop evolution. The impact caused mass extinction of some biota, but other "opportunistic" species preferred the changed environment; mammals, birds and angiosperms proliferated. Interdependent or parallel evolution also allows multiplication of the variety on earth, for example, the appearance of insect-pollinated flowering plants along with the insects that gather the nectar.

Man's appearance on earth has affected the planet tremendously. Among animals, man is the only one that learned extensive use of natural resources. He learned to wear clothes and build houses, so that he can live in diverse and adverse climates. He learned to grow crops and breed animals to his advantage. From the marching of Roman legions to modern warfare, competition within the species brought out the animal instinct in man. Modern man exploits earth's resources, tinkers with 'creation', has mastered the airspace, and now intrudes upon outer space. Burger points out that man himself is responsible for the extinction of several animals and plants which served his needs for food and shelter. Nevertheless, *Homo sapiens* may survive much longer than any other species on earth as he has learned to protect himself from diseases and natural disasters.

Burger accepts that there may be planets where life may exist as 'bacterial slime in moist depressions'. He is well aware that such life existed on the earth 4,000 million years ago and served as a prototype of present life. Once the dice of evolution started rolling on earth, it reached the present day climax. As Carl Sagan used to say, "there are billions and billions of stars" and many of them are hundreds of light-years away. Scientists may still get curious and wonder 'Did the evolutionary dice of life roll in any one of those stars?' but getting such information from the stars will take an astronomical number of human-life years.

Burger chose a fascinating theme for his book which creates curiosity and interest in scientists and non-scientists alike. Although the theme is simple, the book encompasses a vast and complex subject matter. Here lies Burger's ingenuity. He covers many subjects (astronomy, astrophysics, origin of earth, geology, geophysics, origin of life, evolution, paleontology, botany, zoology, anthropology, genetics, etc. etc.), but still keeps the

account lucid, simple and interesting. An immense amount of data has been digested in telling the uniqueness of planet earth and the story of the origin and evolution of life during the last 4,000 million years. This book will serve best as a medium to popularize natural, physical, earth, and planetary sciences. Burger's book is a must for undergraduate science students and graduate students of liberal arts. It should be available to the general public in all libraries for it will contribute to scientific awareness about the 'unique' planet we live on and to consciousness about the journey of our precious life on earth. – Satish K. Srivastava, Geology Consultant, 3054 Blandford Drive, Rowland Heights, California 91748-4825, e-mail: [sksrivastava@earthlink.net](mailto:sksrivastava@earthlink.net)



**American Botanical Prints of Two Centuries**, D.R. Bridson, J.J. White, and L.B. Bruno. 2003. ISBN 0-913196-75-4. (paper, \$ ). Hunt Institute for Botanical Documentation, Carnegie Mellon University, Pittsburgh, Pennsylvania. 239 pp. Two centuries of American botanical printmaking are illustrated in a catalogue from a recent Hunt Institute exhibition. The authors summarize the 19th century as an era of "practical" printmaking. Indeed, printmaking in service of the botanical text (often for government agency reports) seems to have limited the aesthetic development of the art during that century. Our authors show hand-colored, line, and wood engravings, as well as a range of lithographic styles. The art is in turn primitive (see Figure 71, a wood engraving of *Ornithopus scorpioides*), rigidly academic (consider Congdon's *Analytical Class-Book of Botany*, ca. 1855), and fanciful (the delicately rendered details of *Ulex europeaus* in Figure 83), but too rarely (for example in the case of William Sharp's color lithograph of *Victoria regia*), quite lush and beautiful. Surprisingly, the exceptional decorative qualities of selected title pages is not reflected in most of the featured illustrations of plants. Perhaps inadvertently, we are offered a sense of the absurd in a hand colored lithograph of *Uvularia perfoliata*, rising monstrous and out of

proportion in Figure 105. We are also allowed to toy with the impression that botany in the United States was never that far from exploration, expansion, and economic interests (see the pecan varieties "Success" and "Moneymaker" in a 1905 *Yearbook of the United States Department of Agriculture*). Truly nightmarish are the ubiquitous, ugly chromolithographs, most of which were apparently executed with a studied disregard of detail and color. The authors note that photography provided improved images (along with challenges) late in the century, and their illustrations of a garish photomechanical halftone (*Dicentra cucullaria*) and a clammy 3-color halftone of *Robinia viscosa* provide ample evidence of the challenges. The 20th century brought what the authors call "printmaking for its own sake." The artwork they have chosen here complements its 19th century counterparts, providing consistently embarrassing examples of grotesque misuse of line, light, texture, and color (one notable exception is the unusual wood engraving of a tomato plant with hornworm larva by Grace Albee). Less botanical and more a collection of moods, rhythms, and impressions, the prints from last century speak for themselves and I invite you to examine them without further comment from me, in order to register your own opinion. The authors catalogue the exhibition in the last 1/3 of the book, providing very useful background information about publications and their illustrators. Samuel Hammer, Boston University.



**Consider the Leaf.** Glattstein, Judy. 2003. ISBN 0-88192-571-3. 227 Pages. Timber Press, Portland Oregon. This book is subtitled "Foliage in Garden Design" and it is clear that Judy Glattstein has given a great deal of thought to this subject. She writes with great enthusiasm for the potential of leaves to provide strong and lasting impact while flowers may have only fleeting appeal. Though she does quote her mother's advice to "suit yourself", she clearly prefers a "designed garden" to a "collection of plants". She mentions some simple design principles she finds useful such as planting three of a kind in a triangle and in terms of foliage shape she advocates mixing a strap-leaved planting with a bold-leaved planting with a lacey-leaved planting. To these two basic maxims she adds a wealth of

insights concerning leaf colors, surface characteristics (trichomes, wax, and variegation). She also suggests ways to use the foliar features of herbs and edible ornamentals, achieving seasonal interest, designing gardens with a geometric plan and even creating leafy topiary.

Each of the ten chapters is an essay with a title such as "Dusky delights" or "Shimmering Selections" in which occasional subheadings for such subjects as trees, shrubs and perennials appear. There are also a few insets with a single thought such as "You might want to invest in precious metals, so to speak, by combining gold-leaved plants and silver-leaved plants". There are many color plates showing some stunning combinations of foliage, as well as a commendable scattering of plates which demonstrate more unfortunate combinations. The author writes of foliage in a very readable manner and also has strong opinions on a variety of other topics relating to gardening, such as composting, deer repellent, the value of tried and true plant varieties and the (deplorable) practice of tying up daffodil leaves when the flowers have gone by. However, these other thoughts often seem to be randomly scattered among the main points about foliage and it was difficult to reference them later.

The book tends to appear repetitive after awhile, though if the reader is simply researching a single topic such as variegation, this would not be an issue. For example the author's obvious affection for *Hosta* (bold-leaved plants) and *Astilbe* (lacey-leaved plants) leads to multiple recommendations for using various (and often the same) cultivars of these genera in the different chapters on leaf shape, color and texture. Gold-edged leaved *Hosta* "Frances Williams" appears several times, in chapters on color, shade and variegation. Occasionally, as with *Berberis thunbergii* "Aurea", almost exactly the same wording is used again to describe the plant.

There is an index of scientific and common plant names, though the author strongly favors the use of Latin names in a well-stated introductory paragraph. However I wish that the index had included some of the other topics covered in the book as well. In addition to, or perhaps instead of, listing the plant names in an index, I also wish the author had developed a table which in addition to page numbers, had columns for the hardiness zone appropriate for each plant, shade/sun conditions and which one or more of the foliage design elements are demonstrated by the plant. Such a table would have made it much easier to use this book as a guide for actually designing and planting one's own garden as hardiness and cultural information seemed somewhat haphazardly

presented throughout the prose.

This book would not be useful to a plant scientist, nor do I think it is rigorous enough to serve a textbook. However, it does contain many thoughtful and sometimes provocative opinions to guide a gardener from simply collecting plants to designing with plants. I am a very much an amateur in garden design, but I happened to be creating a new bed while I read this book. Under the Glattstein's influence, I found myself transplanting lacey-leaved *Astilbe* plants in threes, adding *Pulmonaria* for its bold and variegated leaves and scattering strap-leaved *Iris* (also in threes) among them, all with the shiny dark-green leaves of my husband's *Rhododendron* plantings in the background. With so many books focusing on flower characteristics, this book on foliage could certainly find a place on the shelves of the amateur or professional gardener as well as in the library of a botanical garden.

–Joanne Sharpe, Coastal Maine Botanical Gardens, Boothbay Maine

**The Illustrated Encyclopedia of Trees.** David More & John White 2002. ISBN 0-88192-520-9 (Cloth \$79.95) 800 pp. Timber Press, Inc. 133 S.W. Second Ave., Suite 450, Portland, OR 97204-3527. Upon receiving The Illustrated Encyclopedia of Trees, I eagerly removed it from the packaging carton and began leafing through it. Here was a gorgeously illustrated book of exactly 800 pages filled with color paintings of hundreds of European and American trees in many stages of their life cycle; from seed and seedling, to cone and flower, to branches and leaves, to mature specimen. It was David More's personal project "to record in detail as many tree species, varieties and cultivars as he could find in the British Isles and Ireland." As the "Foreword" to the book expresses, "it was the private work of an artist obsessed by trees." The book is only encyclopedic in terms of those trees of northwestern Europe, Britain and Ireland, and the exotic species that have been introduced there. These include a wide coverage of American trees but no tropical species and only a few sub-tropical forms are presented.

After a brief introductory chapter containing such eclectic topics as "Gardening with Trees" and "Plant Collectors", the book is organized by families, beginning with the gymnosperms (Ginkgo, Yew, Pine, etc.) and ending with the palm family. The organization roughly follows traditional classification schemes. Each two-page spread contains 1 1/2

pages of color illustrations, while the upper right half page is devoted to brief commentaries on the tree species. This consistent format is a pleasant feature of the book.

In the section on oaks, a typical plate of illustrations featuring burr oak (*Quercus macrocarpa*) and white oak (*Quercus alba*) for example, include their leaves in summer and fall coloration, a twig with new leaves and flowers of white oak, acorns of each species, a winter silhouette of burr oak, an autumn silhouette of white oak and an illustration of the bark of white oak. The accompanying text begins with common and scientific names and may include histories or points of interpretation and brief descriptions of distinctive characteristics of form and growth. The white and burr oak pages include their natural distribution, comments on their hybridization tendencies, as well as descriptions of leaf surfaces and size and characteristics of acorns. The short commentaries are always concluded with what the authors call "text notes". There are four of these: 1) Height – the height in meters that the tree may be expected to reach in 10 years, 20 years, and at maturity; 2) Hardiness – a table of hardiness values is included that expresses the approximate minimum temperatures that a cultivated tree will tolerate without sustaining lasting damage. White oak has a hardiness value of 60%, which correlates to temperatures reaching – 24° C; 3) Choice – four categories of usefulness for a tree garden or arboretum: 1. Excellent, 2. Good, 3. Of Lesser Garden Merit, and 4. Not Recommended for Gardens. Both white and burr oak have a Choice value of 3; and 4) Wood – five categories of usefulness are suggested with 1 being the best.

Although the authors inform us that this is not a botanical textbook, but primarily a book for pleasure, a degree of accuracy is expected. One glaring error found in the "Introduction" is the statement that, "all trees are classified as flowering plants". This error extends to the labeling of the figures, for example, white spruce (*Picea glauca*), in which the male and female cones are labeled "male and female flowers". Using the term "flowers" rather than "cones" is understandable in light of the lay approach of the book, but misleading given the taxonomic organization. Another deficiency is the lack of consistent scale markers within the illustrations. In most cases when mature trees are illustrated, animals such as a fox, dog, hawk or even a park bench are used to bring scale to the drawing. Leaf, flower and fruit illustrations contain no scale markers. If added, these would bring a level of scientific accuracy to the publication.

The book has a short glossary of 129 terms including common descriptive terms like "glabrous" and

“decussate” as well as several obscure terms like “pollarding” and “socketing”. There are two indexes, one of scientific names and the other of English common names.

Apart from a few minor inconsistencies, this is truly a work of art and a labor of love. The crabapple (*Malus*), magnolia and ornamental cherry (*Prunus*) sections are stunning in the coloration and details of flowers and fruits. You can turn to the index and find your favorite tree and then navigate to that page where your visual senses will be rewarded by the talent of David More. I recommend this book to the amateur and professional botanist alike and to anyone with a deep wonder of the plants we call trees. - Daniel C. Scheirer  
Northeastern University.

**Weeds in My Garden: Observations on Some Misunderstood Plants** Charles B. Heiser, Timber Press, Portland, OR 2003. Few botanists are as highly regarded and well-liked as Dr. Charles B. Heiser, Professor Emeritus of Botany at Indiana University. His years of service to the field and his lengthy list of achievements and publications are the stuff of legend. Dr. Heiser’s academic lineage can be traced back to Linnaeus himself, and his own academic children, grandchildren, and (gasp!) great-grandchildren increasingly occupy influential positions throughout the current botanical landscape.

In other words, I couldn’t help but wonder if it would be a sort of career suicide for the likes of me – a graduate student in botany and an academic grandchild – to write a review that pans his latest book.

Thankfully, I won’t have to find out. His book is worth the read.

*Weeds in My Garden*, Dr. Heiser’s sixth book, is a foray into a subject near and dear to his heart. In 1950, he published a paper in Horticulture titled *Weeds are here to stay*; and it appears as if the author was correct. A half-century later his interest in the subject has also remained. His most recent literary effort is an informative and charming nod to our floral inquilines that might just melt the cold hearts of “hand pullers” and Roundup® users alike.

Both the author (in his introduction to the main body) and the publisher (Timber Press, in their promotional materials) go out of their way to make it clear that this

book is not intended to be a manual for weed identification. Rather, *Weeds in My Garden* (which Heiser began and then put on the back burner in the 1980s before taking it up again in retirement) is a collection of anecdotes, insights, and factoids about the most commonly encountered (and often disregarded) weedy plants that one might find on and about cultivated ground in temperate North America. The “garden” referred to in the title is the Botany Experimental Field at Indiana University which, for all intensive purposes, seems to be more Heiser’s garden than anyone else’s – if even for the fact that many of the plants established there arrived by his own hand. As such, the reader can’t help but develop a defined sense of the place as much as the plants – and through each of these one takes away a keen sense of the man himself.

Heiser’s book is an entertaining ride, particularly for the botanists among us. As much as the book can be enjoyed by anyone, the content is particularly geared towards readers that have a working knowledge of plants and some understanding of plant taxonomy. My greatest pleasure came from the many bits of interesting information that set the book apart from a typical flora or field guide (neither of which this book aspires to be). Some of this information can probably be found in other places, like the fact that a Swiss engineer invented Velcro in the 1940s upon close examination of the hooks on the fruits of the Cocklebur (*Xanthium strumarium*). Other content is less likely to be encountered elsewhere, such as the author’s account of the people of Malawi - who not only eat two and half pounds of Purslane (*Portulaca oleracea*) per week, but also call it by a common name that translates to “the buttocks of the wife of a chief.” There is more where that came from; and this book is made all the more enjoyable by featuring liberally the personal experiences of the author. This is where the biggest smiles are to be had.

As an example, Heiser tells the story of introducing a group of college students to Pokeweed (*Phytolacca americana*) on a field trip soon after being served Pokeweed pie at the home of Charles Deam:

I told them that they had probably heard that this plant was poisonous as I boldly put a berry in my mouth. I was swallowing before I remembered that the berries I had eaten at the Deams’ were cooked whereas this one was raw! I died, of course.

Yes, the book is fun. But this is not to say that the book is any less useful because of it (indeed, it is probably more useful because it *is* fun). I found myself referring to *Weeds in My Garden* throughout the summer as I tended to my own vegetable garden – continually learning new things about my

own weeds as I pulled them from beneath my tomato plants and looked them up in the index.

I imagine that having *Weeds in My Garden* on my bookshelf is something like having Dr. Heiser at my beckon call. Whenever I encounter a weed that I'd like to know something about, he is right there, ready to share with me the sort of insight that comes about only after decades of rigorous research, keen observation, and a passionate love of plants. At \$23.95 (for the hard cover) it's a bargain. Christopher T. Martine, Department of Ecology and Evolutionary Biology, University of Connecticut.



**The Tangled Field: Barbara McClintock's Search for the Patterns of Genetic Control.**

Comfort, Nathaniel C. 2003. ISBN 0-674-01108-2 (Paper US\$17.95) 337 pp. Harvard University Press, 79 Garden Street, Cambridge, MA 02138. The book 'The Tangled Field' is a biography of a legendary American geneticist Barbara McClintock (1902-1992). She was awarded Nobel Prize in 1983 for her work on transposable elements or mobile genetic elements (or popularly known as 'jumping genes'). The book takes you through the journey of discovering transposable elements by McClintock. The author of the book, Nathaniel C. Comfort, did an excellent job in delineating McClintock's life history, her aspirations, her scientific thinking and how she did overcome the obstacles in her career. The book has been divided into ten chapters (e.g. Myth, Freedom, Integration, Patterns etc.). The chapters will cruise you through different times of her life.

Trained under Rollins Emerson at Cornell University, McClintock completed her Doctorate in 1927 and started working as an Instructor of Botany at Cornell. She then became a Research Associate at Cornell University (1934-1936). She worked as an Assistant Professor at the University of Missouri (1936-1941). McClintock joined Cold Spring Harbor Laboratory in 1942 and remained there till 1967.

The author also describes the meeting of McClintock with Goldschmidt and how their concept of the gene was different from Beadle and Tatum's hypothesis of the gene as an individual unit (or particle). McClintock was selected as a Guggenheim Fellow

when she was only 31. She arrived in Berlin, Germany in the fall of 1933 and met Richard Goldschmidt, head of Kaiser Wilhelm Institute for Biology. Goldschmidt was a long time believer in the holistic approach of genetics (genes are not separate units rather their functions are governed by surrounding genes).

The book emphasized how McClintock was happy and productive in Cold Spring Harbor Laboratory (CSHL). CSHL gave her independence to pursue her own scientific goal. CSHL was also the place where she first presented her data on transposable elements (she referred to them as 'controlling' elements) in a public seminar in 1951. The book highlights another interesting aspect of McClintock describing her as a developmental geneticist (and transposable elements being a part of plant development). The book also mentions that she was mainly interested in genetic mechanism of plant development, transposition was secondary importance to her.

The book highlights Barbara McClintock as a multifaceted and multitalented personality. Other than being a brilliant geneticist, her professional achievements at her young age were definitely outstanding. She was elected to be the vice president of Genetics Society of America at the age of 37. She was also elected to the National Academy of Sciences at the age of 42.

The book has a wonderful collection of rare pictures of Barbara McClintock in casual moods, as a scientist, and also her childhood photos. These pictures are definitely an asset for the reader. The area of plant molecular biology and genetics are expanding exponentially. We must know the history of classical genetic work in order to proceed forward with the available tools of genomics. It is not an easy task for a writer (biographer) to obtain the detailed and necessary facts about a person and compile those into a single book. In that respect the author did a wonderful job. The lucid language flows through out the book.

There is some unnecessary detailing in the book which could have been avoided (e.g. to describe the turmoil situation in Germany in the fall of 1933, the author wrote Goldschmidt's experience about a hate song that the gangs used to sing in subways in Berlin).

Finally, this book will be an excellent resource for any plant geneticist or biologist. I strongly encourage biologists, students, faculties or science enthusiasts to acquire this book. Dr. Chhandak Basu, Department of Plant Sciences, University of Tennessee, Knoxville, Tennessee.

**Plants on the Trail with Lewis and Clark**, Patent, Dorothy H. 2002. ISBN 0-618-06776-0 (cloth \$18.00), 104 pp., Clarion Press, NY. **The Lewis & Clark Herbarium, Academy of Natural Sciences Digital Imagery Study Set**, Spamer, Earle E. and McCourt, Richard M. 2002. ISBN 0-910006-55-5 (CD-ROM \$19.95), The Academy of Natural Sciences of Philadelphia Special Publication 19, ISSN 0097-3254. Although aimed at different audiences, these two resources have been released just in time for the bicentennial anniversary of Lewis and Clark's expedition across the continental United States and focus on the botanical aspects of one of the most important early explorations of western North America. *Plants on the Trail with Lewis and Clark*, a companion volume to the previously published *Animals on the Trail with Lewis and Clark*, is written for readers in grades 4 - 8 and is beautifully and generously illustrated with numerous color photographs by William Muñoz of the plants and landscapes that the men encountered. The book provides a broad overview of the expedition, then concentrates on the importance that Jefferson placed on botany as a critical element of the information Lewis and Clark gathered about the newly acquired Louisiana Territory and the northwest, particularly with respect to possible new crops and medicinal herbs. The author clearly conveys the keen interest that Lewis had in plants; passages from both his and Clark's journals provide descriptions of the new plants they found in their own words and demonstrate to a young reader both the excitement and the challenges of collecting scientific data under the conditions that the men endured, including the loss of a cache of specimens to a flood.

The book provides an interesting account of the different botanical resources available to the men of the expedition as they traveled across the country. Nearly half of the book addresses specific uses of plants by Lewis and Clark and the people with whom they interacted on the journey, including the critical role played by Sacagawea in providing wild foods to supplement their diet. Throughout the text, the author puts a human face on history by including passages from journals that document the reactions of the men to the new foods and environments they encountered. The use of medicinal plants is presented well, with brief descriptions of the plants and the illnesses they treated, noting that many of these plants are still used in herbal remedies today. The final chapter addresses the fate of Lewis's specimens after he returned, with a brief account of how the collection was used scientifically, including reproductions of some of Pursh's original illustrations, and emphasizes the botanical achievements of the expedition. Several appendices provide information on additional resources and a detailed listing of common names of plants

preserved in the Lewis & Clark Herbarium with the dates and places they were collected. This correlates nicely with the map of their route found at the beginning of the book. With its focus on the scientific importance of the Lewis and Clark expedition, this book would make an excellent addition to the shelves of teachers and libraries in elementary and middle schools.

The CD-ROM of *The Lewis & Clark Herbarium, Academy of Natural Sciences Digital Imagery Study Set* is an impressive resource that presents digital images of 226 surviving herbarium sheets of plants collected by Meriwether Lewis housed in the Lewis & Clark Herbarium at The Academy of Natural Sciences of Philadelphia, combined with numerous additional taxonomic and historical documents and images. The CD is designed to be viewed through either of the standard web browsers and is compatible with both Windows and Macintosh systems.

The heart of the study set is an index based on the Reveal et al. (1999) taxonomic revision of the collection, the full text of which is included and enhanced with additional comments and links; three non-vascular plants not discussed in the revision are also included. Each taxonomic entry in the index links to a page that provides the nomenclature and discussion from Reveal et al. (1999) with links to facsimiles of the relevant taxonomic literature of Pursh (1813), Coues (1898) and Meehan (1898), sheet provenance, original annotations by Lewis and/or Pursh, and links to images of the plant, which frequently are of lectotypes. The images focus on individual plant specimens rather than whole herbarium sheets, which were previously illustrated by Moulton (1999). Color images would have been nice, however, the authors deliberately chose black and white format in order to conserve space so that all would fit on a single disk; the images vary somewhat in quality, but on the whole are sharp and clear, and all include a scale bar. Although many entries include several different images of the plants, their usefulness is somewhat limited, since most of the images are at relatively low magnification. The nomenclatural discussions are enhanced by images of original annotations by Lewis and annotations that appear on the reverse of the herbarium sheets, as well as by a chart comparing labels written by Lewis and Pursh.

Complementing the visual components of the disk are numerous additional features, including a brief account of Lewis's passion for plants and discussion of his probable collecting techniques, as well as the complicated history of the collection, helpfully illustrated by a diagram. Among the supplementary

resources are texts of letters and facsimiles of 19th century publications related to the collection, including color images of 13 of Pursh's original illustrations that can be traced directly to Lewis's specimens. A site map is extremely helpful in navigating through these resources and provides numerous indices that organize information on the disk by common name, collection locality, collection date, repository, and type specimens. Other useful features include a correlation chart of specimen numbers used by Moulton and Reveal, a listing of specimens not collected by Lewis that are included in the collection, and an extensive bibliography. Missing, however, is a glossary of terms encountered in the text that might be helpful to a more general audience.

As the authors point out, the Lewis & Clark Herbarium is a national treasure of almost unparalleled historical and scientific importance, since the collecting sites of many specimens can be accurately traced based on expedition journals. Spamer and McCourt have done an excellent job of compiling a diverse array of information and presenting it in an easily navigated format. Whether you are interested in the Lewis & Clark Herbarium for taxonomic or historical reasons, this disk provides computer access to the entire collection to anyone. - Sharon Klavins, Department of Ecology and Evolutionary Biology, University of Kansas, Lawrence, KS 66045-7534.

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**Rumphius' Orchids**, Orchid texts from the *Ambonese Herbal* by Gergius Everhardus Rumphius. Translated and annotated with an introduction by E. M. Beekman. 2003. ISBN 0-300-09814-6 (Cloth, US\$ 22.00; \$15.40 at www.amazon.com), frontispiece, 15 B&W plates, 172 pp. Yale University Press, New Haven, CT. Few figures in the history of botany are as interesting, mysterious even after almost 300 hundred years of studies by botanists in several countries, tragic, awe inspiring and alluring (one of us, JA, traveled all the way to Ambon in a vain attempt to find traces; the other, TWY, spends time in the library with the *Herbarium Amboinense*) as Georgius Everhardus Rumphius (born Georg Everhard Rumph in 1627 in Wölferheim, Hesse, now part of Germany - 1702 City of Ambon on the island of the same name, Maluku Archipelago or Spice Islands, now part of Indonesia). The son of August Rumph (?-1666), a well positioned architect and builder and Anna Elizabeth Keller (?1600-1651) who came from a family in what is now the Netherlands. Young Rumph was taught Greek, Hebrew and Latin as well as drafting, construction and mathematics. But this was not enough to keep him in Hesse. Like other Hessian young men at the time he signed up as a mercenary to serve the Doge of Venice and fight the Turks in Crete. Instead he was taken to Holland, abandoned for a period and put on a ship bound for Brazil which never made out of European waters because it was either wrecked or captured by the Portuguese. Somehow Rumphius became a soldier in Portugal and stayed there from 1646 until 1649.

Rumphius returned to Hesse in the summer of 1649, held jobs but the siren song of distant lands prevailed and he left in December 1652, this time as a soldier for the Dutch East India Company (DEIC) bound for Batavia (now Jakarta) on the island of Java in the Dutch East Indies (now Indonesia). He arrived in Batavia, at that time a "Dutch town transplanted to the tropics" in July 1653, remained there for short period and at the end of that year arrived in the Maluku (Moluccas) archipelago that was to be his home for the remaining forty eight years of his life. By choice, he never returned to Java or Europe. Ambon became his home. There he teamed up with a local woman (it is not clear if she was a wife or a companion) who shared his interests, but lost her and all but one of their children (son Paul August who drew his father's best known likeness) in an earthquake; studied nature; wrote about and drew the plants and animals of Ambon only to lose his art and writings it all in a fire; rewrote and redrew; became blind; resisted pressure to leave; died and was buried in a grave just outside Kota (City) Ambon which is now lost. He rose from soldier to builder in Ambon and eventually became a merchant for

DEIC. But all of these occupations were, as Rumphius put it, a mask he had to wear just so he could have opportunity to study nature (de Wit, 1977; Wehner Zierau and Arditti, 2002).

Professor E. M. 'Monty' Beekman, Rumphius's current biographer, translated his *Ambonese Curiosity Cabinet* (Beekman, 1999) did an admirable job of going to original sources in several parts of the world and tracing facts and even a relatively unknown likeness of the Blind Seer of Ambon. his origins and familial connections. He even found Rumphius's signature (Beekman, 1999). At present Prof. Beekman is busy translating the entire multi volume *Herbarium Amboinense* (seven large volumes) into English. This wonderful little book is an excellent appetizer.

The book consists of a thoughtfully annotated translation of Rumphius's descriptions of orchids in the *Herbarium Amboinense* (a copy of which we saw and even held in the Singapore Botanic Gardens library). All of Rumphius's orchid plates (XLII-LIV, XCIX, XLI in the *Herbarium*) are included in the book. Prof. Beekman's translation is outstanding. In addition he also elaborates on the biological, botanical and scientific implications (both modern and ancient) of Rumphius's orchid descriptions. For example, he points out that Rumphius was the first to illustrate the "trash baskets" which several Orchidaceae form with upward growing roots, describe (but not draw) orchid seeds, draw resupination, elaborate on post-pollination phenomena in some species and write on ethnobotany of South East Asian orchids (Wehner, Zierau and Arditti, 2002). Rumphius was also perceptive enough to debunk silly European ideas about the origin of orchids (spilled semen of copulating goats and birds which "ferments" into orchids) in favor of biologically sound ideas.

Rumphius was not a trained botanist and had no access to the European literature and centers of learning. Therefore he used the linguistic tools he had. This renders his writings a very fascinating read, and Prof. Beekman retains this quality in his careful, sensitive and perceptive translation. For instance, this is what Rumphius wrote about *Grammtophyllum scriptum* L., an orchid for which he had a special liking: "Aristocracy, which will grow only on trees . . . of which the first and most beautiful is *Angracum scriptum* [which he also calls The Inscribed Angrek] . . . a rare plant . . . whereon flowers grow orderly above each other . . . each one on its separate bandy little stem. These flowers have a particular shape . . . fashioned from five outer leaflets . . . some yellow, some yellowish green, whereon one will see broad drops of characters, as if Hebrew letters, but not distinctly so, all of them

brownish red, different on each flower . . . And they [the flowers] finally begin to wither, but without falling off, and their feet become thick and bellied, and form the fruit which resembles a young *Blimbing* . . ."

*Pecteilis susannae* (R. Br.) Raf. had a special and sentimental meaning for Rumphius. He described the flower as having "a long and somewhat crooked tail at the back, hanging down for some 6 inches, as thick as an oaten pipe, round, hollow inside, on the outside green and white. And, he added "since I have not been able to find either a Malay or an Ambonese name, I call it *Flos Susannae* in Latin. In Malay" *Bonga Susanna* [Susanna's flower], in memory of her who when alive, was my first companion and helpmate in looking for herbs and plants, and who was also the first one to show it to me." This moving epitaph (de Wit, 1977) shows that Rumphius and Susanna (about whom not much more is known) shared a strong bond and that she was more than just his wife or companion. She was his soul mate and coworker. It is clear that Susanna meant more to Rumphius than his second (Dutch) wife Isabella (Wehner, Zierau and Arditti, 2002) for whom he did not name an orchid.

We would like to quote additional parts from the book and elaborate further about Prof. Beekman's scholarly approach, engaging style, extensive knowledge, careful analytical approach, historical accuracy, well documented details and nostalgic yet scientific tribute to the "Blind Seer of Ambon," but space limitations prevent us from doing so. However we do wish to state this book is an important addition to the orchid literature with special relevance to South East Asia because Rumphius can justly thought of as the first modern botanist to work there and the father of the orchidology in the region. It is a masterpiece given to us by a Professor of Germanic languages at the University of Massachusetts and a scholar of Dutch colonial literature, "Monty" Beekman. –Joseph Arditti, Professor Emeritus, University of California, Irvine and Tim Wing Yam, Singapore Botanic Gardens.

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Q.

Why did the aquatic plant biologist always order rice cut-grass (*Leersia oryzoides*) for lunch?

A.

Because he was a ‘picky’ eater.

Q.

Which aquatic plant goes “Nyuk, nyuk, nyuk?”

A.

Curly pondweed (*Potamogeton crispus*).  
Don Les

**Slipper Orchids of Vietnam.** Leonid Averyanov, Phillip Cribb, Phan Le Loc, and Nguyen Tien Hiep. 2003. ISBN 0-88192-592-6 (Hard cover US\$49.95) 308 pp. Timber Press, Portland, Oregon 97204–The French colonial rule in Indochina lasted from about 1858 until 1954 when they left (wisely) and US became embroiled (unwisely) in the Vietnam war. During their rule the French produced a *Flore Generale de l’Indo-Chine* which even had a section on *Paphiopedilum* (vol. 6, Fasc. 5, pp. 636-646), but they managed to discover only about 11 species. An additional 11 species and several natural hybrids were discovered since then.

This book describes all currently known “slippers” of Vietnam. But it does not stop at that. Its first part elaborates on the geography, geological history, geomorphology, climate and the flora of the country. These sections place the genus *Paphiopedilum* in context of the Vietnamese flora and are very useful.

Part II consists of an overview of what is described as slipper orchids, but is essentially limited to *Paphiopedilum*. Since the slipper orchids as a group include *Cypripedium*, *Selenipedium*, *Phragmipedium* and *Mexipedium* it would have been better to entitle this part *Paphiopedilum*.

Besides, since this is essentially a scientific book a colloquialism like “slipper orchids” is not necessary. But, we are nit picking because this part provides an overview of the orchids covered in the book. This overview is good as it stands but unfortunately it ignores what is known about the physiology and cytology of the genus.

Taxonomy of the Vietnamese Slipper Orchids (part III of the book) occupies most of the book (pp. 83-265) and is its heart. Here one finds descriptions of all known Vietnamese *paphiopedilums* as well as information about their distribution, ecology, flowering season, IUCN status, affinities, history, habitat, climatological data for the regions in which they are found, other details and photographs. This part is excellent and very instructive. The only omission from the climatological data is day length. This may prove to be of importance if any Vietnamese *Paphiopedilum* species are found to be photoperiodic. However, we should also note that the currently available information, limited as it is, indicates that *Paphiopedilum* plants are induced to flower by temperatures in the range of 14-15° C and not day length.

Part IV of the book is depressing because it describes eloquently and illustrates with wrenching photographs the rampant habitat destruction and species extinction that take place in Vietnam at present. Intrigue, skating close to the law and strange manipulations are never far from orchids. Some of them are associated with the description and naming of new species. These sidelight intrigues or intriguing sidelights are alluded to in the history sections of some species descriptions, but those interested in more details can find some in Eric Hansen’s excellent and factual *Orchid Fever*.

Prof. Leonid Averyanov has been writing extensively and impressively about Vietnamese and Russian orchids in both English and Russian since the 1980s. This he book showcases his extensive knowledge of orchids in general and *Paphiopedilum* in particular as well as Phan’s and Lee’s expertise in their country’s flora.

The book is illustrated well with excellent color paintings, good maps, instructive graphs and very good line drawings as well as appropriate color photographs (although the colors of some photos appear under-saturated compared to living material). There is only an index of scientific names. Altogether we like the book and think that others will also find it to be a useful addition to the literature on the orchids of South East Asia. – Joseph Arditti, Department of Developmental and Cell Biology, University of California, Irvine, and Tim Wing Yam, Singapore Botanic Gardens, Cluny Rd, Singapore.

## Books Received

If you would like to review a book or books for PSB, contact the Editor, stating the book of interest and the date by which it would be reviewed (1 February, 1 May, 1 August or 1 November). Send E-mail to [sundberm@emporia.edu](mailto:sundberm@emporia.edu), call or write as soon as you notice the book of interest in this list because they go quickly! Ed.

**Biology of Apples and Pears.** Jackson, J.E. 2003. ISBN 0-521-38018-9. (Cloth US\$130.00) 488 pp. Cambridge University Press, 40 West 20<sup>th</sup> Street, New York, NY 10011-4211.

**Bromeliads for Contemporary Garden.** Steens, Andrew. 2003. ISBN 0-88192-604-3. (Cloth US\$29.95) 198 pp. Timber Press, 133 S.W. Second Avenue, Suite 450, Portland, OR 97204-3527.

**Columbines: Aquilegia, Paraquilegia, and Semiaquilegia.** Nold, Robert. 2003. ISBN 0-88192-588-8 (Cloth US\$24.95) 193 pp. Timber Press, 133 S.W. Second Avenue, Suite 450, Portland, OR 97204-3527.

**Dangerous Liaisons? When Cultivated Plants Mate with Their Wild Relatives.** Ellstrand, Norman C. 2003. ISBN 0-8018-7405-X (Cloth US\$65.00) 244 pp. The Johns Hopkins University Press, 2715 N. Charles Street, Baltimore, MD 21218-4319.

**Edible and Poisonous Mushrooms of the World.** Hall, Ian R., Steven L. Stephenson, Peter K. Buchanan, Wang Yun, and Anthony L.J. Cole. 2003. ISBN 0-88192-586-1 (Cloth US\$39.95) 372 pp. Timber Press, 133 S.W. Second Avenue, Suite 450, Portland, OR 97204-3527.

**Field Guide to Wilsons Promontory.** Meagher, David and Michele Kohout. 2001. ISBN 0-19-550857-2 (Paper US\$) 352 pp. Oxford University Press, 2001 Evans Road, Cary, NC 27513.

**Fire Blight: The Foundation of Phytobacteriology.** Griffith, Clay S., Turner B. Sutton, and Paul D. Peterson (Eds) 2003. ISBN 0-89054-309-7 (Paper US\$55.00) 158 pp. American Phytopathological Society Press, 3340 Pilot Knob Road, St. Paul, MY 55121-2097.

**Flax: The Genus *Linum*.** Muir, Alister D. and Neil D. Westcott (Eds.) 2003. ISBN 0-415-30807-0 (Cloth US\$135.00) 307 pp. Taylor & Francis/Routeledge, 10650 Toebben Drive, Independence, KY 41051.

**Genera Orchidacearum. Volume 3. Orchidoideae (Part Two) Vanilloideae.** Pridgeon, Alex M., Phillip

J. Cribb, Mark W. Chase, and Finn N. Rasmussen (eds). 2003. ISBN 0-19-850711-9 (Cloth US\$150.00) 368 pp. Oxford University Press, 198 Madison Avenue, New York, NY 10016-4314.

**Handbook of Processes and Modeling in the Soil-Plant System.** Benbi, D.K. and R. Nieder (eds) 2003. ISBN 1-56022-915-2. (Paper US\$89.95) 762pp. Food Products Press, 10 Alice Street, Binghamton, NY 13904-1580.

**Hawthornes and Medlars.** Phipps, James B. with Robert J. O'Kennon and Ron W. Lance. 2003. ISBN 0-88192-591-8 (Cloth US\$24.95) 180 pp. Timber Press (in collaboration with the Royal Horticultural Society) 133 S.W. Second Avenue, Suite 450, Portland, OR 97204-3527.

**The Healing Plants of Ida Hrubesky Pemberton: Catalogue of an exhibition 25 September 2003-29 February, 2004.** White, James J. and Lugene B. Bruno. 2003. ISBN 0-913196-76-2 (Paper, US\$12.00) 64 pp. Hunt Institute for Botanical Documentation, Carnegie Mellon University, 5000 Forbes Ave., Pittsburgh, PA 15213.

**Hypericum: The Genus *Hypericum*.** Ernst, Edzard (Ed.) 2003. ISBN 0-415-36954-1 (Cloth US\$120.00) 241 pp. Taylor & Francis/Routeledge, 10650 Toebben Drive, Independence, KY 41051.

**Linnaeus' *Philosophia Botanica*.** Freer, Stephen (Translator). 2003. ISBN 0-19-850122-6 (Cloth US\$) 402 pp. . Oxford University Press, 2001 Evans Road, Cary, NC 27513.

**The Lowland Maya Area: Three Millennia at the Human-Wildland Interface.** Gómez-Pompa, Arturo, Michael F. Allen, Scott L. Fedick, and Juan J. Jiménez-Osornio (eds). 2003. ISBN 1-56022-971-3 (Paper US\$79.95) 659 pp. Food Products Press, 10 Alice Street, Binghamton, NY 13904-1580.

**Maximising the use of Biological Nitrogen Fixation in Agriculture.** Hardarson, Gudni, and William J. Broughton (eds) 2003. ISBN 1-4020-1237-3. (Cloth US\$79.25) 226 pp. Kluwer Academic Publishers B.V. p.o. Box 989, 3300 ZA Dordrecht, The Netherlands.

**Oregano: The genera *Origanum* and *Lippia*.** Kintzios, Spiridon E. 2002. ISBN 0-415-364-943-6 (Cloth US\$115.00) 277 pp. Taylor & Francis/Routeledge, 10650 Toebben Drive, Independence, KY 41051.

**Phytoremediation: Transformation and Control of Contaminants.** 2003. McCutcheon, Steven C. and Jerald L. Schnoor (eds). ISBN 0-471-39435-1

(Cloth US\$115.00) 987 pp. John Wiley and Sons, Inc., 111 River Street, Hoboken, NJ 07030.

**Practical Applications of Chlorophyll Fluorescence in Plant Biology.** DeEll, Jennifer R. and Peter M.A. Toivonen. 2003. ISBN 1-4020-7440-9 (Cloth US\$96.00) 259 pp. Kluwer Academic Publisher B.V., P.O. Box 989, 3300 AZ Dordrecht, The Netherlands.

**Principles of Plant Health and Quarantine.** Ebbels, David L. 2003. ISBN 0-85199-680-9 (Cloth US\$100.00) 302pp. CABI Publishing, 2001 Evans Road, Cary, NC 27513.

**Progress in Plant Nutrition: Plenary Lectures of the XIV International Plant Nutrition Colloquium.** Horst, W.J., A. Bürkert, N. Claassen, H. Flessa, W.B. Frommer, H. Goldbach, W. Merbach, H.-W. Olf, V. Römheld, B. Sattelmacher, U. Schmidhalter, M.K. Schenk, and N.v. Wirén (eds.) 2002. ISBN 1-4020-1056-7 (Cloth US\$59.00) 188 pp. Kluwer Academic Publishers B.V., P.O. Box 989, 3300 AZ Dordrecht, The Netherlands.

**Rasayana: Ayurvedic Herbs for Longevity and Regeneration.** Puri, H.S. 2003. ISBN 0-415-28489-9 (Cloth US\$72.00) 352 pp. Taylor & Francis/Routledge, 10650 Toebben Drive, Independence, KY 41051.

**Rumphius' Orchids: Georgius Everhardus Rumphius.** Beekman, E.M. (translator) 2003. ISBN 0-300-09814-6 (Cloth US\$22.00) 224pp. Yale University Press, 302 Temple Street, New Haven, CT 06520-9040.

**Shengmai San.** Ko, Kam-Ming. 2002. ISBN 0-415-28490-2 (Cloth US\$80.00) 136 pp. Taylor & Francis/Routledge, 10650 Toebben Drive, Independence, KY 41051.

**Sulphur in Plants.** Abrol, Yash P. & Altaf Ahmad. 2003. ISBN 1-4020-1247-0 (Cloth US\$171.00) 398 pp. Kluwer Academic Publisher B.V., P.O. Box 989, 3300 AZ Dordrecht, The Netherlands.

**Sustainable Soils: The Place of Organic Matter in Sustaining Soils and Their Productivity.** Wolf, Benjamin and George H. Synder. 2003. ISBN 1-56022-917-9. (Paper US\$49.95) 352pp Food Products Press, 10 Alice Street, Binghamton, NY 13904-1580.

**Transposable Elements: A Guide to the Perplexed and the Novice.** Galun, Esra. 2003. ISBN 1-4020-1458-9 (Cloth US\$132.00) 335 pp. Kluwer Academic Publishers B.V. p.o. Box 989, 3300 ZA Dordrecht, The Netherlands.

**Tropical Flowering Plants: A Guide to Identification and Cultivation.** Llamas, Kristen Albrecht. 2003. ISBN 0-88192-585-3 (Cloth US\$69.95) 424 pp. Timber Press, 133 S.W. Second Avenue, Suite 450, Portland, OR 97204-3527.

Q.  
Why did the cowslip (*Caltha*)?



A  
Because she saw the bulrush (*Scirpus*)!  
Don Les

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