

ALUMNI NEWSLETTER



Greetings to all. As this newsletter will show, associates of the Botany Department, both past and present, have had a very busy year. Early last fall we watched with some trepidation as a crane lifted the roof of our research greenhouse. After the installation of all new

benches, lights and cooling, we now have a state-of-the-art electronically controlled environment that can accommodate experiments on rice and maize and the needs of a new faculty member, **Simon Gilroy**. In July another Titan Arum bloomed. I've lost count of how many blooms we have had, but this one was a beauty!

Our newest Assistant Professors, **Eve Emshwiller** and **Cecile Ané**, now have a year of service under their belts. During the summer we welcomed Prof. Simon Gilroy (Cell Physiology) and his lab group to the B1 floor of Birge Hall after their move from Penn State. There's still a bit of air-handling work needed in their lab space (sorry about that, Simon) but the walls have a fresh coat of paint, most of the equipment has been moved in, and they're raring to go. This year we also searched for a new Director for the Wisconsin State Herbarium. We are very pleased that **Dr. Ken Cameron** from the New York Botanical Garden has accepted our offer and will be joining us within the coming year. We were excited both by his research program, focused on orchids, and his vision of the contributions a vibrant herbarium can make. We look forward to a continuation of the tradition of great things coming from the Herbarium and its staff under his leadership.

This fall also saw the retirement of long-time staff member **Diane Derouen**. We thank her for 25 years of service to our academic mission as lab manager for several undergraduate courses. Prof. Tom Sharkey has also announced his impending retirement in Jan. 2008, after 20 years of service to the UW. Instead of putting his feet up, Tom will assume a position as Chair of Biochemistry and Molecular Biology at Michigan State. Some retirement!

Our faculty and staff continue to gather awards recognizing their contributions and accomplishments. There is a more complete list inside, but just to highlight two of the more unusual ones: This spring, **Prof. Don Waller** was made a Chevalier (Knight) in L'Ordre des Palmes académiques by the French Ministry of Education in recognition of his contributions to French national education. **Prof. Emeritus Hugh Iltis** recently had a prairie in Marquette County dedicated to him by landowners David and Shelley Hamel in honor of his inspirational passion for the environment. Both awards were richly deserved.

Congratulations also to **Ted Cochrane**, **Kandis Elliot**, and **Claudia Lipke** on the publication of their beautiful book *Prairie Plants of the University of Wisconsin-Madison Arboretum*, and to **Prof. Linda Graham** on the publication of a new textbook for biology majors, which is already in use in college classrooms around the country.

Best wishes for a happy and productive up-coming year for all of our friends and associates.

Donna Fernandez
Chair



UPDATES

New Faces

Faculty



Welcome to **Simon Gilroy**. Simon joined the Botany Department in June, 2007, moving here from Penn State's Department of Biology. Simon is known as a superbly original experimenter and pioneer in molecular and physiological aspects of plant cell biology. His

research focuses on the way roots react to changes in their physical environment, particularly gravitational and mechanical stimuli, and the way that seed processes are governed by hormones.



We have two new Academic Staff members: **Sarah Swanson** was appointed (50% time) as Director of the Plant Imaging Center (see Plant Imaging Center Update, following page)



Marie Trest started in August as **Diane Derouen's** replacement. Marie worked in **Dr. Susan Will-Wolf's** lab until August 2007, and as of Fall semester 2007 started as laboratory coordinator for Botany 330-Algae, Botany 332-Fungi, and Botany 100 for non-majors. Marie received her M.S. degree from Botany in 2007. She plans to

continue pursuing her interests in lichenology with summer activities and contributions to the Lichen Herbarium.

Staff



Sherry Stuart replaces **Jan Froding** who left to start a new married life in Door County. Sherry has several years experience with payroll as a school administrator and in past employment. She completed her M.S. degree in Geography at UW-Madison, focusing on a statistical analysis between

regional precipitation levels in the central United States and ENSO phases/strength. A Wisconsin resident, Sherry lived in Madison for 32 years and is married with two children. Ultimately, she would like to teach and help with research on long-term climate change.



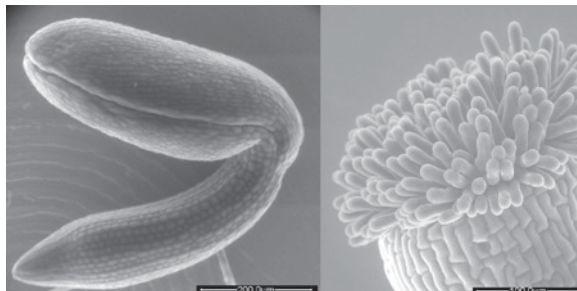
"Little Stinker," our smallest Titan Arum, bloomed in July.

Lab News

Plant Imaging Center

Established in the summer of 2005 with the support of the National Science Foundation (and the UW Graduate School, the Department of Botany, and other units on campus), the Plant Imaging Center (PIC) has become a veritable hotspot of research activity. Plant researchers (mostly graduate students and postdocs) come from across campus to the B1 level of Birge Hall to use the environmental scanning electron, the confocal, and the epifluorescence microscopes that form the core equipment of the PIC. This equipment has raised the quality and broadened the scope of many research projects conducted by UW plant biologists. A number of publications and grants have already stemmed from the PIC. Students have opportunities to train on state-of-the-art equipment, and it is now part of the Botany Department's undergraduate curriculum.

Starting June 2007, **Dr. Sarah Swanson** (coincidentally, a UW-Botany alumna) will become the PIC's first Director. She arrived here from Penn State along with her husband, Simon Gilroy, who begins his professorship at the same time. Sarah, with her experience in plant cell imaging, will help take the PIC to the next level of performance and capability and ensure that it remains a vibrant center of plant research.



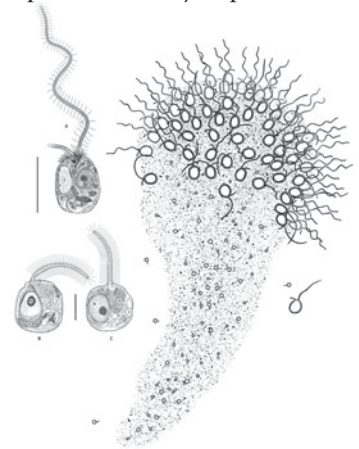
Above, two example images acquired with the scanning electron microscope on fresh samples that were not prepared in any way. Left: *Arabidopsis* embryo removed from a nearly mature seed; right: the stigma of an *Arabidopsis* flower. The environmental scanning electron microscope can image fresh tissue because its special technology permits operation with water vapor in the sample chamber.

Graham Lab

Prof. Linda Graham's lab loves to make new discoveries about protists (especially algae) and bryophytes. Some of us focus on understanding the very early history of land plants, and others ask ecological questions or explore technological applications.

This past year **Eunsoo Kim** defended her Ph.D. thesis on protist evolution. She isolated and cultured many types of flagellate protists from Wisconsin lakes, obtained dozens of new gene sequences from them, and used the sequences to test hypotheses about early events in eukaryote diversification and the ancestry of land plants. She also used molecular phylogenetics and transmission electron microscopy to describe three new protist genera that live together in cozy symbiotic relationships, and had fun naming the new critters with the help of taxonomy expert

Professor Emeritus Bob Kowal. Eunsoo also used gene sequences to detect cryptic speciation in a freshwater dinoflagellate, thereby contributing to protist biogeography theory. She has accepted a post-doctoral position at Dalhousie University, Halifax, Nova Scotia where she will use genomic approaches to study protist evolution.



Current Ph.D. students

Shana Ederer studies cyanobacterial nitrogen-fixation associations with mosses. Shana is working toward a Ph.D. in Botany and an M.S. in Biometry (in the Statistics Department) at the same time, so she is always very busy. Ask Shana about the benefits of using mosses in green roof technology. **Alice Ecker** is studying the ecophysiology of bryophytes that model very early land plants, with the goals of better understanding earliest plant carbon cycle impacts, weird little fossils that might represent early plants, and early steps in the molecular evolution of plant stress responses. Ask Alice what liverworts do when turned upside down (they don't just sit there and wave their rhizoids in the air). Stuart Jones, co-advised by a colleague in the

Civil & Environmental Engineering department, is working on modern carbon cycle issues involving algae and bacteria in lakes (including some in Asia), using molecular approaches. Ask Stuart what lake microbial communities do after a typhoon.

Undergraduate Botany major **Jennifer Jackowsky**, co-supervised by a colleague in civil and environmental engineering, is developing technology for removing nuisance algal growths from lakes and producing useful compounds from the algae. In 2006, honorary fellows **James Graham** and **Lee Wilcox** were co-authors of a second edition of our textbook *Plant Biology*, and are currently working on a second edition of our textbook on algae, while also helping with research. We send greetings to past members of the lab and department.

Waller Lab

Prof. Don Waller's Lab was busy in the field during summer 2007, with many new and continuing projects underway. Don is busy around the lab and beyond, as he has assumed his post as the President of the Society for the Study of Evolution (www.evolutionarysociety.org) and, together with Caitilyn Allen (Plant Pathology) and Harvey Jacobs (Nelson Institute for Environmental Studies), garnered a NSF grant to support a graduate exchange program between the UW and l'Ecole Nationale Supérieure Agronomique de Montpellier in France. Meanwhile in Madison, all current Waller Lab students are in their first or second year, so this is an exciting time of transition.

Our recent work focused primarily on re-surveying sites in Wisconsin upland forests sampled by **John Curtis** and his students in the 1940s and '50s. **Shannon Wiegmann's** work in northern Wisconsin implicated white-tailed deer as a primary driver of declines in showy, nutrient-rich forbs and increases in fiber-rich graminoids and ferns. **Dave Rogers's** complementary and even more extensive work in southern forests make clear that succession, fire suppression, and especially habitat fragmentation are contributing to species losses, exotic invasions, and community homogenization. Not surprisingly, John Curtis himself foretold these impacts half a century ago.

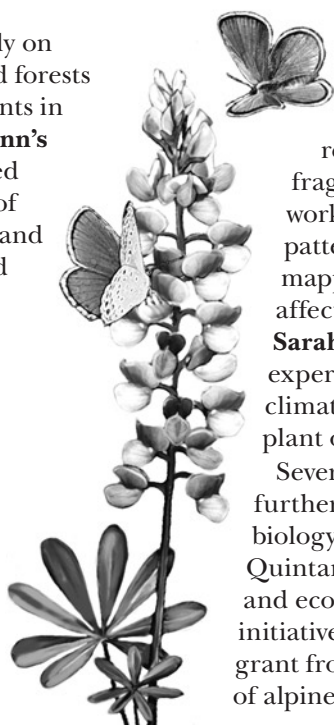
The Curtis re-sampling project also spurred a project with the Great Lakes network of National Parks to design protocols to monitor changes

in vegetation and ungulate impacts. **Sarah Johnson** and **Erika Mudrak** led teams to compare sampling methods performed side-by-side in the Apostle Islands and Pictured Rocks National Lakeshores. We resurveyed many of **Ed Beals** and **Grant Cottam's** original sample sites in the Apostle's and had the opportunity to make detailed evaluations of the statistical power of the classical PEL methods, as well as alternatives like the Forest Inventory and Analysis program of the U.S. Forest Service, and a new hybrid plot-based method. Together with NPS colleagues, we just submitted a manuscript to the Canadian Journal of Forest Research on this work, which we hope will help land managers to design more efficient and effective schemes to monitor long-term ecological change.

To extend our work on long-term changes in Wisconsin forests, we also submitted two proposals to explore how specific 'functional traits' (e.g. height, nutrient content, dispersal ability, etc.) may affect which species increase or decline. One project would extend a database that Dave Rogers initiated during his recent Ph.D. work and dovetail with similar efforts now going on around the world. We are also working hard with Dave to improve our Access database that now contains data from more than 250 Curtis sites. The other project would investigate causes and consequences of weedy exotic plant invasions, particularly garlic mustard, buckthorn, and honeysuckle. As part of this effort, new student **Sarah Kliensky** is starting a project to assess the competitive and allelopathic effects of buckthorn (*Rhamnus*).

Current student **Sarah Johnson** will extend the Curtis-based work this summer by resurveying many of the floodplain forests. We expect these dynamic communities to show pronounced responses to exotic invasion and habitat fragmentation. To complement our resurvey work, **Erika Mudrak** is investigating spatial patterns in our current data and will revisit mapped sites to explore how spatial patterns affect species' persistence in the landscape. **Sarah Wright** will set up a reciprocal transplant experiment to explore ecotypic variation in climate tolerance traits of *Lupinus perennis*, host plant of the endangered Karner Blue Butterfly.

Several new students will also extend our work to further species, sites, and continents. Conservation biology M.S. student **Ann Busche** will visit Quintana Roo in Mexico to assess the ecological and economic impact of sustainable forestry initiatives there. With support from a new IGERT grant from NSF, **Michelle Haynes** will begin studies of alpine meadows in Yunnan in Southwest China.



She is eager to assess how well various approaches to conserving nature work in protecting these sensitive alpine plant communities. **Evelyn Williams** will pursue her interest in rare plants by exploring the distribution, taxonomic status, and population genetic structure of populations of *Botrychium* ferns growing in the U.P. of Michigan. If she grows bored with that, she may also work on populations of *Cirsium pitcheri* that former student **Kathryn McEachern** (UW alumna) worked on years ago at Pictured Rocks.

When we are not sampling, botanizing, or crunching data, we intend to paddle, wander, wonder, and keep humorous field notes in the spirit of our Plant Ecology Lab ancestors. We know we have a tradition to maintain.

Zedler Lab

Students in **Prof. Joy Zedler's** lab made scientific advances, developed restoration approaches, presented papers, earned degrees, and received awards. Here are the highlights.

In Midwestern wetlands, which are threatened by widespread invasions of reed canary grass, **Nic Jelinski** (M.S. 2007) and his co-advisor, Dr. Chris Kucharik, advanced the science of carbon storage by showing that Faville Prairie's wet floodplain soils sequester far more carbon than upland soils. Furthermore, the native prairie was not out-done by reed canary grass in carbon storage, so we are

confident in recommending wet prairie restoration to help reduce greenhouse gasses. Nic's thesis in Land Resources earned him the M.S. degree in May. **Nicole Anderson** helped Nic with his productivity study (7 harvests over summer 2006) and completed her Botany Senior Thesis on the contributions of various species to wet prairie productivity.

Kate Legner and **Vanessa Kolberg** completed a joint Botany Senior Thesis on the phenology of reed canary grass, which grows for a full month beyond two native plants that it displaces, namely, big blue stem and tussock sedge. Their work was done in Curtis Prairie. At the May garden party, Kate was honored for having the highest grade point among Botany majors this year.

Mike Healy continued his field experiments to control reed canary grass and informed those who attended the Wisconsin Wetland Assoc. conference and Arboretum Science Day that early spring applications of sethoxydim (a grass-specific herbicide) are effective in keeping the canopy short so that other species can compete with this aggressive invader. This third year of field work will provide the database needed for Mike's dissertation.

In order to find ways to replace invasive plants with a native sedge, **Beth Lawrence** continued an experiment at the Arboretum's mesocosm facility, where we are attempting to accelerate tussock formation by varying water levels, nutrient additions, and other factors. Beth presented her

Faville Prairie. Photo by Nic Jelinski



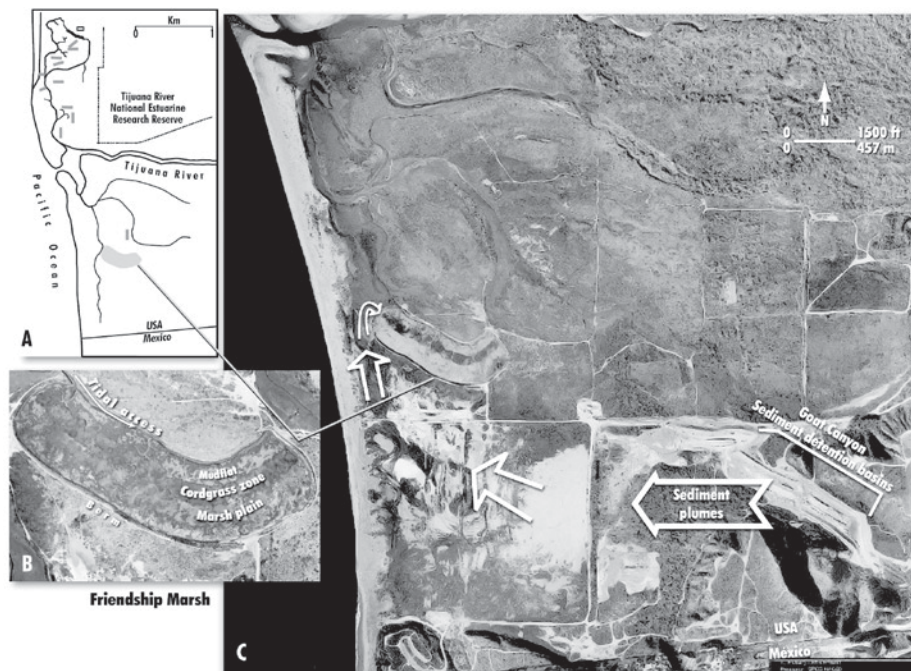
preliminary findings at the Arboretum Science Day and then traveled to NW Yunnan Province, China, as part of an NSF-sponsored program (Integrated Graduate Education and Research Training). Her reconnaissance this summer will help her plan her dissertation research on sedge meadows used as winter feeding grounds by the native, highly-revered black-necked crane.

Steven Hall continued his quest for methods to control hybrid cattails, which have invaded the Arboretum's Gardner Marsh, and a native cattail that has invaded spring-fed wetlands in Michoacán. Steve collaborates with Dr. Roberto Lindig-Cisneros at UNAM-Morelia on the latter study, and this summer he is interviewing local harvesters of cattails to see if (as expected) their collection methods aid biodiversity conservation. Local people use cattails for forage and to make baskets and other crafts. In the Arboretum, Steve found that four harvests are needed to reduce cattail cover, and that native sedges respond favorably to selective cutting. Using soils collected in Gardner Marsh, Steve and **Heather Kaarakka** carried out a seed bank study and showed that the sedge meadow could still recover if cattails were controlled. Heather received the John Curtis Award for the department's best ecological paper.

California salt marshes have different restoration challenges. At Tijuana Estuary, increased storminess and development have interacted to erode soils and deposit them on the downstream salt marsh. While summarizing 30 years of research (Joy Zedler and Janelle West, *in press*), it became clear that sedimentation elevated the marsh plain by at least 10 cm, which in turn reduced species diversity. **Cathi Bonin** (M.S. 2007) then explained why three species became the most abundant over time. After comparing 17 plant traits, she concluded that the most dominant plant best exploited light by growing twice as tall as the other abundant species, that the co-dominant best exploited space by sending runners into canopy openings, and the third best exploited soil resources by growing the most root biomass. Meanwhile, **Alison Varty** (M.S. 2007) explained why an annual plant was lost from the

elevated marsh plain. The annual thrives in shallow (~5 cm) depressions where waterlogged soil subdues perennials. When sediments fill depressions and elevate the marsh plain, perennial species have the competitive advantage. Both Cathi and Alison received their M.S. degrees in May.

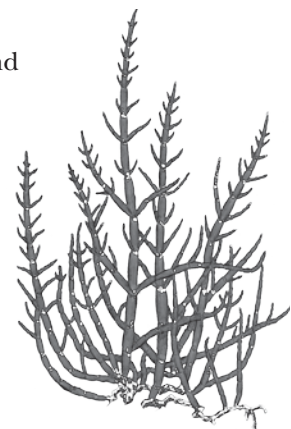
Jelinsky, Healy, Hall, and Bonin presented their research at the Annual Conference of Wisconsin Wetlands Society. Jelinsky, Healy, Hall, Lawrence, Kaarakka, and Anderson presented their work at the 7th Annual Arboretum Science Day.



Estuary Activities

Joy Zedler has long championed National Estuarine Research Reserves in Wisconsin and California.

Estuaries are places where rivers meet the sea, creating physical, chemical and biological gradients. Around the U.S., parts of 27 estuaries have been designated National Estuarine Research Reserves (NERRs), involving partnerships between states and the National Oceanic and Atmospheric Administration. Each Reserve receives funding for monitoring, research and education, and the resulting data are used to assess changes in the nation's coastal waters and biota.



Potpourri

From the Greenhouse



Wollemi Pine Seedling

The National Geographic Society and Wollemi Pine International of Australia have entered into a partnership to make seedlings of the rare Wollemi Pine available to the public as well as to researchers.

Because there are fewer than 100 specimens in the wild, our

Greenhouse and Garden Director Dr. Mohammad Fayyaz was fortunate to obtain a seedling for the Botany Department. A “living dinosaur,” the Wollemi Pine appears in the fossil record and some botanists speculate that the species dates to the Jurassic period.

This pine is an endangered species and, in addition to conserving the remaining natural plants, is a good candidate for conservation in greenhouses because it is propagated from plant cuttings. Investigators will be exploring its chemical compounds to discover how this pine has survived for such a long time. Two local publications have expanded on this rare plant: *Isthmus*, “Jurassic Plant” by David Medaris, 01/25/07; and *On Wisconsin*, “Living Fossil” by Madeline Fisher, Spring 2007 edition.



Our “Biggest” Supporters

Liam is only six years old and has twice saved money from his allowance to donate it to the Botany Department. He dressed up as David Attenborough for Halloween because of his love for the *Private Life of Plants*, BBC nature documentary series.



Liam and little bro Alec

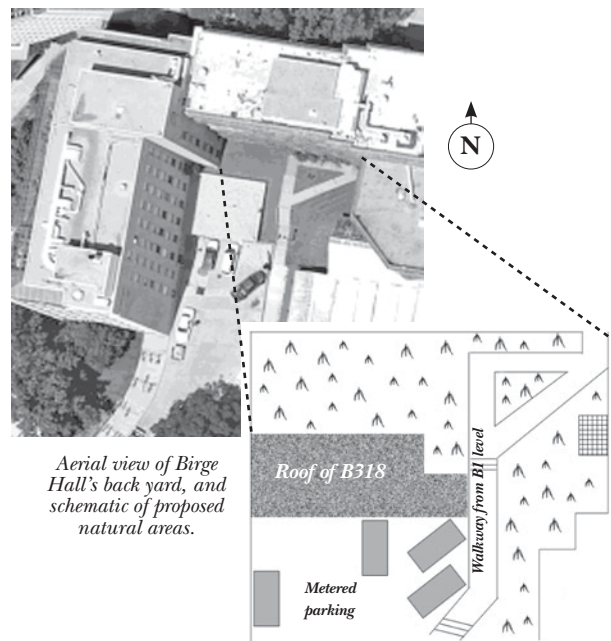
He is drawn to the splendor of the titan arum (*Amorphophallus titanum*) and has asked questions about plants like, “Are there acids and enzymes in the insectivorous pitcher plants?”

His younger brother Alec is also as impressed with plants and follows in his brother’s footsteps.

NOTE: we have to contact the kids’ parents & ask permission to use this, also must have their last name. Otherwise it’s out.

Naturalizing Birge Hall’s Back Yard

Wedged between the concrete of the loading dock and the south side of Birge Hall is a small patch of green space that is maintained (occasionally weed-whacked is more accurate) by the university facilities department. At a recent Botany Department faculty meeting, **Professor Edgar Spalding** proposed that the space could be naturalized and used in teaching ecological, ecophysiological, taxonomic, and floristic aspects of Botany. Independent Study projects could be devised to take advantage of a ‘back yard laboratory.’ The faculty have directed a committee to look into the possibility and devise a plan. One of the challenges will be to maintain the area. Hopefully, a combination of some money and youthful Botany-major backbones will turn this neglected piece of turf into a teaching asset.



Aerial view of Birge Hall’s back yard, and schematic of proposed natural areas.

A New Home for Botany?

Birge Hall is widely viewed as one of the most charming buildings on campus, and it has served the Department of Botany well for many years. But for all its charm, Birge Hall is not well suited to 21st Century science. Every new faculty hiring requires painfully expensive renovations, and even then the resulting space is not ideally suited to productive research. For this reason the 10-year external review of Botany recommended a long-term space plan. “Plan or be planned for,” as **Prof. Tim Allen** might put it.

Committees from Botany, Zoology and the Institute for Cross-College Biology Education (ICBE) met to develop a visionary plan for a new **Integrative Biology Building** to serve both the research and education mission. While numerous obstacles must be overcome, most notably fundraising, we can sketch the building concept and explain our excitement about it.

The Integrative Biology Building would most likely be situated on the site currently occupied by Noland Hall and Zoology Research between North Mills and Charter streets, one block south of the Botany Garden. In addition to the obvious opportunities for new collaborative and interdisciplinary research, the IBB would provide a new, and much needed, home for biological science education on campus. In the way that Birge Hall

has provided a physical home for so many Botany undergraduates, the new building would provide a home for students in five majors (Botany, Zoology, Biology, Molecular Biology, and Biological Aspects of Conservation). The ICBE administration, the Center for Biology Education, and all three introductory biology series (Bio 151/152; Bot 130/Zoo 101; BioCore) would be situated in close proximity to one another, allowing for obvious synergies. This education core would be embedded in a matrix of active research, primarily conducted by members of the Botany and Zoology Departments.

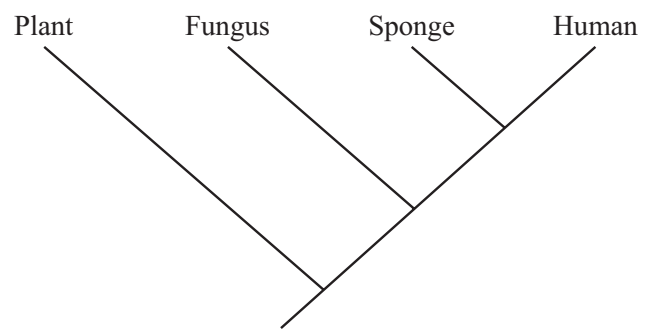
With students surrounded by active scientists in the halls and cafeterias, and with biology research labs visible, we send the important educational message that science is a work in progress, not a fixed set of facts established by authorities. Conversely, by having scientists surrounded by student learning at all levels, we support a liberal arts conception of science, in which research is broadly relevant to the human condition and is fully integrated with all other facets of human knowledge. As such, this building will promote a perspective that is not characteristic of any other biology building on campus and few if any buildings nationally. While many of us would be sad to leave Bascom Hill, a compelling positive vision and the hard realities of modern science are forcing us to face the possibility that Botany will have a new home in ten years' time!

Tree-thinking and the Understanding of Evolution

By Prof. David Baum

Let me start with a quiz. The tree to the right correctly depicts the currently accepted evolutionary relationships among the included organisms. Based on this tree, is a fungus more closely related to a plant or a human?

As many as 80% of UW biological sciences undergraduates give the answer “plant” to questions like this, although the correct answer is “human.” If you have difficulty correctly interpreting evolutionary trees, or phylogenies, well you might ask, “why does that matter?” The central postulate of Darwinism is that distinct living species trace back to common ancestry. Trees encapsulate the core principle of common ancestry and, thus, provide the most accurate conceptual framework for thinking about evolution. I am convinced that a major reason that so many educated members of the public are confused by and skeptical about evolution is that they do not visualize evolution in terms of trees, but rather think



of evolution as a linear progressive story. The linear narrative “fish to amphibians to reptiles to monkeys to humans,” is familiar but misleading. It forgets that fish and amphibians and reptiles and non-human primates are all alive today, have all been evolving for the same amount of time, and are all, thus, equally “advanced.”

The traits (morphological and molecular) of living species provide incontrovertible evidence of tree-like ancestry, as figured out by Darwin 150 years ago. However, if one takes a linear view, then one can easily overlook all the evidence for evolution and seek

instead evidence of linear progressions—unbroken series of fossils, which are hard to come by and never complete. In short, if one doesn't understand tree thinking, it is difficult to critically evaluate the scientific evidence for evolution.

If one holds, as most biologists do, that a clear understanding of evolution is an essential part of biological literacy, then teaching tree thinking is an important mission for biology educators—one that I and others in the Botany Department embrace. Indeed, UW–Madison is a national leader in this area, as all introductory biology course series,

including Botany 130, now pay attention to teaching students the principle of common ancestry and the importance of tree thinking. Additionally, we are working with a student in the School of Education to develop curricular materials for high schools and are offering workshops to help train middle- and high-school teachers what they need to know to introduce tree thinking at the precollege level.

More information on tree thinking and why it is important can be found at www.tree-thinking.org. See also "Awards & Kudos".



Historical Notes

Diane Derouen left in September.

Diane arrived at the University of Wisconsin-Madison in 1975 following her education and work experience in biology, biology education, botany, and plant ecology at the University of Texas-Austin, Miami University of Ohio, University of Illinois-Chicago, and the University of Paris-Orsay. Working with Drs. Elizabeth and James Miller at the McArdle Lab for Cancer Research, she refined her research skills and then joined the Botany Department as an instructional lab coordinator in 1982.

As lab coordinator Diane made many improvements to Botany courses. For Botany 100-Survey of Botany, she developed and regularly updated the lab portion of the spring and summer versions of the course. For Botany 330-Algae and Botany 332-Fungi, she developed protocols for



growing numerous cultures of algae and fungi in order to provide optimum material for student study. She also curated the department's extensive teaching collection of preserved fungi, slides, and other instructional resources, and worked supportively with instructors of the fungi course. As with Botany 100, her work contributed

significantly to the consistent high quality of these courses.

During her 25-year career in Botany, Diane actively participated in several departmental committees, on the University Committee, and the 1997-98 Reaccreditation Project, where she helped develop the report on Responsible Biology, available online at <http://www.provost.wisc.edu/reaccreditation/>.

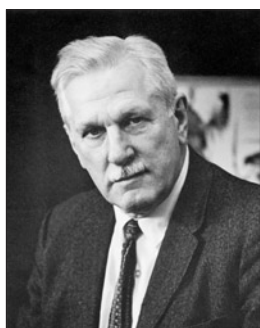
As an early proponent and consistent promoter of “active learning” in biology education and quality teaching assistant training, Diane worked with senior TAs, the TA Training Committee, and Center for Biology Education colleagues to organize special workshops and institutionalize TA training in Botany. She shared her experiences with active learning at campus and national meetings of biology educators, and also organized and hosted Botany Colloquium presentations, such as the 1997 Teaching for Active Learning in Biology by Diane Ebert-May.

Diane was an early proponent and consistent promoter of the importance of including women and minorities in all aspects of science. In 1989, she co-authored *The October 29th Group: Defining a Feminist Science* for the *Women's Studies International Forum* journal. In 1994, she participated in the panel presentation *Reforming and Transforming Science* at the UW–System Women's Studies conference, *Women Shaping Science, the Environment, and Society*, at UW–Steven's Point.

Thank you, Diane Derouen, for being an excellent citizen of the Department of Botany and of the University. *Have Fun In Your Retirement, Diane; the Best Is Yet to Come!*

Folke Skoog's Contributions to the Botany Department and the UW Campus

by Eldon Newcomb, Professor Emeritus



Folke Skoog (1908-2001), one of the twentieth century's leading figures in plant biology, was a member of our departmental faculty from 1947 until his retirement in 1979. He was the recipient of many honors and awards for his pioneering research, including election to membership in the National

Academy of Sciences in 1956. He served as president of several scientific societies and was an active participant on numerous national panels and study sections. Later in life he received a number of honorary degrees and was elected to membership in several foreign scientific academies. He was awarded the National Medal of Science in 1991.

However it is not my intention here to discuss Skoog's scientific career. His monumental contributions to plant hormone research, including the discovery in his laboratory of a major new class

of hormones, the cytokinins, have been described authoritatively in considerable detail by his former student and longtime collaborator, Professor Donald Armstrong, in a *Biographical Memoir of the National Academy of Sciences* (1). Several copies of this memoir are available for perusal in the Botany Department office.

What I describe here is the key role that Folke Skoog played in reinvigorating this department in his early years here, and also the lasting impact he made on the campus as a whole. He was the driving force behind the turbulent transformation the department suffered through, beginning in 1947 and lasting into the early 1960s.

By the end of World War II, the department had been depleted and was no longer at the forefront of botanical research. University administrators and leaders in the College of Agriculture were urging it to bring in fresh research talent, particularly someone with an outstanding reputation in plant physiology who could collaborate with research workers in a number of Ag departments, especially agronomy, forestry, horticulture, plant pathology and soils.

In the spring of 1946, discussions to find a plant physiologist began among nine faculty: Myron Backus (mycology), George Bryan (morphology & Chair), John Curtis (physiology and ecology), Dick Evans (cryptogamic botany), Norman Fassett (taxonomy), Emma Fisk (anatomy), Leonard Huskins (a cytogeneticist newly arrived from Canada), John (Fritz) Stauffer (photosynthesis and irradiation physiology) and John Thomson (taxonomy). Paul Allen, a fungal physiologist, had been hired but was not yet on campus. To find the right person, the faculty held ten meetings between April 9 and June 7, 1946.

Emma Fisk (*see In Memoriam*) served as secretary; her notes on the April 9 meeting recorded that “Men on Ag campus want someone working on growth substances with whom they can consult.” Names proposed at that first meeting were David Goddard, James Bonner and Folke Skoog. At subsequent meetings, other names mentioned were A. G. Norman, H. A. Barker, H. S. Stuart, B. S. Meyer, Jacob Levitt and T. C. Broyer. The group finally settled on Skoog, and at the final meeting, they formally voted to offer him an associate professorship without tenure. By that time he had already visited the campus and had met with them and with members of the administration and a number of leading figures on the Ag campus.

Folke was 38 years old when he arrived on the Wisconsin campus in January 1947. I had never met a scientist at all like Folke Skoog. In those early years at Wisconsin all of us graduate students were

entranced by his intelligence, energy, inquisitiveness and personal charm. He showed a warm interest in every student or associate he encountered, and drew everyone into his circle of influence. If he hadn't seen us for a day or so, he would look us over quizzically and ask how we were doing, and would usually respond to a reply with a lightning-quick witticism, his good-humored banter conveying genuine interest in our well-being. He was remarkably approachable.

Skoog's impact on the campus was immediate and huge. He quickly developed personal relationships with leading figures in L&S, on the Ag campus, in the Medical School and in the university administration, and provided advice and established numerous collaborations that often ranged considerably beyond his own primary research interests. It is no exaggeration to say that he was responsible for rejuvenating and modernizing the botany department and giving it strong campus leadership in basic research in the plant sciences.

Soon after his arrival he began to urge curricular reform within the department, e. g., in the approach and emphasis used in presenting the major introductory course in botany and in the course requirements for M.S. and Ph.D. candidates. As for the latter, he insisted that graduate students in botany be required to be better grounded in physics and chemistry. He also took a strong stand regarding the kinds of faculty appointments and the criteria to be used in judging candidates. These vigorously argued proposals understandably were of concern to some members, who felt their disciplines threatened, and resulted in years of acrimonious staff meetings.

The internecine warfare began shortly after his arrival. The staff meetings were held in Fritz Stauffer's office, located just a couple of doors from my own office, so as a graduate student I was aware that bitter tirades and shouting matches were taking place. Another concern of those on the upper floors was that, with my own addition as an assistant professor in 1949 and Jerry Gerloff's appointment in 1950, which Skoog had insisted upon, the department was becoming seriously unbalanced, with five members in the physiology section. (By this time John Curtis had shifted entirely to ecology.) Grant Cottam's appointment as an assistant professor in ecology in 1949 helped to counterbalance this to some extent.

Early on, matters reached such a state that in a letter dated 11 March, 1950, the L&S Dean, Mark Ingraham, requested that further departmental meetings be suspended temporarily, and announced that he would seek the advice, when necessary, of a committee consisting of Chairman Stauffer and Professors Backus and Newcomb. I don't recall the

three of us ever meeting with the dean or giving him advice about anything. Fritz Stauffer served as chair from 1950 to 1965. Stauffer, a quiet, courteous Southerner, was the ideal chair for those troubled times. One faction would come to see him, heatedly arguing for a particular course of action, and he would blink his eyes a few times and say very little. Then someone else with quite a different point of view would urge another course of action. Stauffer would listen, blink his eyes a few times and say very little. So he was re-elected annually for 15 years!

The disputes continued throughout the 1950s and into the 1960s. However, sometime in 1962 or 1963, Skoog permanently stopped attending staff meetings. Thereafter, before his retirement in 1979 he only attended once or twice, in order to vote on an appointment or two. Many years later he told me he stopped attending because he felt the meetings were too hard on his health. By that time, however, the positions he advocated had been adopted, resulting in a much stronger and more competitive department. Ironically, long after, the disputes were settled, botanists around the country still had the impression that the UW Botany Department was driven by dissension.

Folke contributed to the scientific life of the university in many other ways, sometimes on issues that required considerable courage. He was the initiator and prime mover in the establishment on the campus of the Biotron, one of the very few facilities in the country for the study of plants and animals under controlled conditions. Shortly after his arrival on campus he undertook the overall direction of a comprehensive long-term investigation of the nutritional requirements and possible methods of control of the noxious blooms of blue-green algae in the local lakes resulting from eutrophication.

More importantly, it was Folke Skoog's initiative and persistence that led to the establishment of the highly successful Biocore program on the campus in the mid-1960s. It was his conviction that biology majors would be much better educated if they first received an adequate background in physics and chemistry and then, building on this foundation, took courses in biology in a logical, structured sequence. He argued for the program passionately and persuasively with colleagues across the campus, leading eventually to the formation of a committee. The committee had about eight members and usually met in the Bacteriology Department. The dean of L&S, H. Edwin Young (later, Chancellor Young), attended nearly every meeting. I was on the committee and served as secretary.

After we had formulated our proposals, each committee member chose 2 or 3 departments in Ag,

L&S or the Medical School, and requested a group meeting with each faculty to explain the Biocore program, answer questions and seek suggestions for improvement. This diplomatic approach worked well in answering criticism and enlisting general support. The enduring success of this program on the Madison campus, for whose initiation Folke Skoog was solely responsible, remains a lasting tribute to the soundness of his convictions and his leadership.

Folke's primary motivation was his determination to leave a lasting contribution in basic research. While he was accomplishing all of the above, he was leading a pioneering research program with 10-20 graduate students and postdoctoral fellows at any given time, was serving as an advisor on several other research programs across campus, serving as a very active officer in several scientific societies, and participating vigorously in various national scientific study groups that required frequent trips out of town.

He was of a rather tall and athletic frame, and as a younger man had been active in various sports. At Caltech at age 24 he had represented Sweden as a runner in the 1932 summer Olympics. In the late 1940s and for several years into the 1950s, in the summertime he regularly swam for some distance along the shore of Lake Mendota during the noon hour. For years he also participated vigorously in the football games on laboratory picnics.

But by the mid-to-late 1960s, Folke was clearly slowing down; his idealistic passion and energy for reform and innovation was largely exhausted. He had dropped completely out of departmental affairs, and had become much less active on campus matters. His activities in this later period were confined largely to his own, highly productive research program, and he spent most of his time in his office critiquing lab results and writing or editing papers. To colleagues who only got to know and admire him for his wit and wisdom in his later years, my comment was always: "I wish you could have known him in his early years!"

There is much more to be written about Folke Skoog. Anyone seeking more information should consult the interview Barry Teicher recorded for the Oral History Project of the university a few years before Folke's death. I am confident it will prove richly rewarding. In the aforementioned memoir (1), Don Armstrong described what it was like to be a student in his laboratory.

1) Folke Karl Skoog (1908-2001). A Biographical Memoir by Donald J. Armstrong and Eldon H. Newcomb. Pp. 312-333 in: *Biographical Memoirs of the National Academy of Sciences*, vol. 86. Published 2005 by The National Academies Press, Washington, D. C.

Eldon Newcomb

Professor Emeritus Extraordinaire

By Wayne Becker, Professor Emeritus



Eldon and Joy Newcomb receive a tile from a grateful Botany Department. The tile will become part of the Class of '52 plaza. (See www.botany.wisc.edu/giftgiving/ for detail on commemorative tiles.)

"Gentleman and scholar, dedicated colleague, and trusted friend." These are the words that a colleague of his once used to describe Eldon Newcomb. And they are words that his name is likely to bring to mind for the many former colleagues and students who knew him personally during the more than 40 years of his active association with the Botany Department.

Newcomb retired in 1990 and, looking back on more than four decades of service to the department, he described his career in science as the "fulfillment of a dream." That dream began early; even as a youth he displayed the kind of inquisitiveness and ability for acute observation that led to later scholarship. He attended the University of Kansas City for two years, and then transferred to the University of Missouri at Columbia, where his experiences tipped the balance toward botany in future studies. He completed a Master's degree there in 1942. Following World War II, he enrolled in the UW-Botany Department as a Ph.D. candidate, with John Stauffer as his major professor and Robert Burris in Biochemistry as his minor professor.

The faculty member who had the largest influence on Newcomb was Folke Skoog, who joined

the faculty of Botany in 1947, already known for his work on auxin and just starting the work that led to the isolation of kinetin and the discovery of the cytokinins. Newcomb described the young Skoog as “an extraordinarily dynamic leader whose quick intelligence, scientific curiosity and high standards were an inspiration to all around him.” How appropriate, then, that when the University recognized Newcomb’s contributions with a Distinguished Professorship in 1986, he was designated as the “Folke Skoog Professor of Botany.”

Following the completion of his Ph.D. in 1949—and his marriage to Joy Bright Rieling in the same year—Newcomb was hired as an Assistant Professor in the UW–Botany Department, thereby beginning a long and lustrous career. His long-term interest in the mechanism of cell growth led him to pursue the use of electron microscopy well before this approach became fashionable in plant research. Reflecting on the years of ultrastructural research and the log books that accumulated during those years, Newcomb wrote in 1996 that “the years fall away as I go over these logs and experience once again the excitement and sense of discovery we felt as we explored the unknown world of plant cell ultrastructure.”

The originality of the work in his laboratory derived from the breadth of Newcomb’s scholarship in plant biochemistry, physiology and anatomy. The pioneering work in his lab opened up new fields in plant cell biology that are still active today, including—but by no means limited to—cytoskeleton/cell surface interactions, coated vesicles, leaf peroxisome biogenesis and function, and the role of uninfected cells in nitrogen-fixing nodules. In each of these new fields, Newcomb solidly laid the basic groundwork by patient attention to detail and insightful, yet cautious, interpretation. This fastidiousness assured the lasting quality of his work—and was passed on to the grad students and postdocs who passed through his lab, thereby impacting the quality of their work as well, both at the time and subsequently.

Another manifestation of Newcomb’s perfectionism is the high scientific and aesthetic quality of his micrographs, which are arguably his greatest contribution to science. Throughout his research career, Newcomb set high standards for the field, as has been widely recognized. To quote Brian Gunning, for example, “‘the Newcomb’ became the unit of excellence in the field, to be employed when all other superlatives seemed inadequate.” A strong measure of the impact of these micrographs is the frequency with which they are reprinted: since 1965, micrographs from the Newcomb laboratory have

appeared in over 40 textbooks and in innumerable review articles.

Newcomb was not only a top-notch researcher but a fine teacher as well. He collaborated with several colleagues for many years in the teaching of Botany 130, the introductory course. His graduate course in plant cell biology was very highly regarded for its contemporary content as well as for the perspective that he brought to it. Newcomb was also instrumental in the founding of the Biology Core Curriculum (Biocore), an interdepartmental four-semester sequence structured by levels of organization (e.g., molecules, cells, organisms, ecosystems) rather than by kingdoms. He then helped teach the one-semester freshman course that preceded the four-semester sequence.

Throughout his long career, in which he influenced so many and set such high standards of scholarship and teaching, Eldon Newcomb remained a modest individual, never failing to acknowledge the accomplishments of his associates. Moreover, he retained a sense of awe for the beauty and intricacy of biological systems, and communicated that effectively in the laboratory and classroom alike.

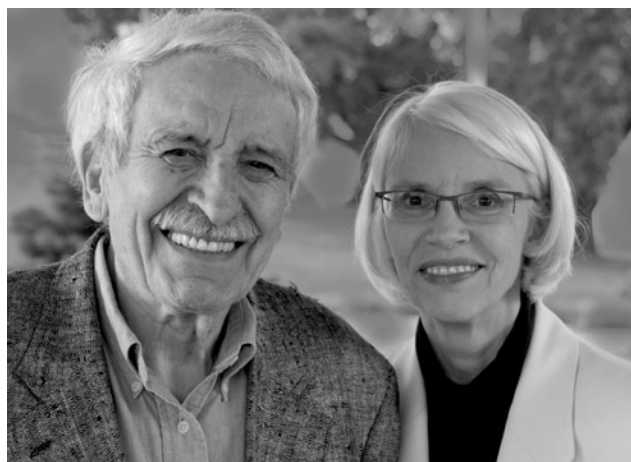
“Gentleman and scholar, dedicated colleague, and trusted friend”—those words say it well and they say it for many. Thanks, Eldon, for the committed scholar that you are and for the many ways you so consistently challenged so many of us to aspire to the same high level of scholarship in both our research and our teaching.



Awards & Kudos

Hugh H. Iltis, Emeritus Professor of Botany, receives a doctorate *Honoris causa*

By **Paul Zedler**, Professor (IES), Faculty Affiliate (Botany)



Hugh H. Iltis and spouse Sharyn Wisniewski

The University of Guadalajara (UdeG), Mexico's second largest and fourth oldest institution of higher learning, honored Professor Iltis in a February 2007 event attended by important dignitaries from UdeG including the Rector General, José Trinidad Padilla López, Executive Vice-Rector, Raúl Vargas, the Secretary General Carlos Briseño and the Rector of the Centro Universitario de la Costa Sur campus, Mtro. Enrique Solorzano. The degree conferred was a *doctorate Honoris causa*, that is, a degree granted in recognition of outstanding achievement. This is only the latest in long list of awards and honors that have been given to Prof. Iltis, who was the director of the UW–Herbarium from 1955 to 1993, and who remains an active and influential presence in the herbarium and the Botany Department in his retirement.

Among these awards: Presidential Certificate of Merit (1987, Mexico); recognition by Conservation Council of Hawaii (1990); Sol Feinstone Environmental Award (1990); National Wildlife Federation Merit Award (1992), Society for Conservation Biology Service Award (1994); University of Guadalajara's Luz María Villareal de Puga Medal (1994); Asa Gray Award (1994); and Merit Award from the American Society of Botany (1996).

This honorary degree from UdeG is particularly apt, as it recognizes Prof. Iltis's long involvement in the botanical research and conservation in Mexico, and especially in western Mexico. A contribution that stands out is the collaborative work that led to

the discovery of *Zea diploperennis* (perennial teosinte, and close relative of cultivated corn, *Z. mays*) in the Sierra de Manatlán. The now legendary catalyst for this was a 1976 Christmas letter. It had two messages: a call for peace and goodwill, and a challenge to his UdeG colleagues to look for *Z. perennis*, a species thought to be extinct in the wild. Prompted by this, Rafael Guzmán, then a student at UdeG, scoured the botanically little-known Sierra de Manatlán and discovered an entirely new species. The importance of this find was immediately apparent. Because it was diploid (hence *diploperennis*) it offered exciting possibilities for introduction of new genetic material into cultivated corn, and new clues into the puzzle of its origin. A paper in *Science* (Iltis, Doebley, Guzmán, and Pazy, 1978) followed and created a stir among both basic and applied researchers.

This was a significant academic contribution, but Prof. Iltis, as former students will know, has never been content to confine himself to the ivory tower. As a passionate and outspoken advocate for the preservation of nature, he and his colleagues in Mexico recognized that they had a golden opportunity to make the case for saving wildlands. With the value of this new wild species clear even to academic administrators and politicians, it was possible first to establish a research reserve centered on the known locations of *Z. diploperennis*—the Las Joyas Biological Research Station. Following on that came the recognition of the importance of the entire mountain chain. In 1988 the Sierra de Manatlán was incorporated into the MAB–UNESCO network of biosphere reserves, largely due to the efforts of Prof. Iltis and his Mexican colleagues and allies, especially Dr. Gonzalo Hallffter. One of the outgrowths of this effort was the creation of the Manatlán Institute of Ecology and Conservation of Biodiversity centered at the UdeG University Center for the South Coast (CUCSur) located in Autlán at the foot of the sierra. While the creation of these dedicated reserves was being pursued, the basic botanical work was not neglected. Prof. Iltis directed expeditions and projects aimed at describing the biological richness of the region. This culminated in the publication of the multi-authored *Flora of Manatlán* (1995), which not only includes a checklist of the extremely rich flora, but also valuable summaries on the ecology, geology, and climate of the area. This volume documents a tribute probably more meaningful to a systematist than an honorary degree—two magnificent trees of the Sierra bear his name, the oak *Quercus iltisii*, and *Magnolia iltisiana*.

Other UW faculty and students have built on the foundation of collaboration that Prof. Iltis created. Numerous faculty and students have participated in

studies in Jalisco and the Sierra de Manantlán. In recent years the Nelson Institute has coordinated a number of projects with the CUCSur campus. As one recent example, a US AID-funded project brought seven students from UdeG CUCSur to Madison in 2006–07 to take classes preparatory to completing their degrees in Mexico in a new program in Natural Resources Management. This exchange traces directly to Prof. Iltis's initial efforts.

In these activities Prof. Iltis has exemplified the best of the expanded Wisconsin Idea—that the mission of the university includes involvement with institutions and people throughout the world. Mission, in the strong sense of dedication to a cause against all odds, definitely applies to Prof. Iltis and his unremitting efforts to save the earth's dwindling natural areas. Like other famous Wisconsin conservationists, he sees conservation as important for everyone, everywhere, not a hobby for the effete or an amenity for those who can afford it. He has shown that his primal approach—which appeals to local pride and stresses the importance of untamed nature as a vital to human health and welfare—can resonate with people of good will everywhere, not just with the faithful. It is for this vigorous advocacy and dedication to building enduring relationships with his cross-border colleagues that he was recognized by UdeG with this signal honor.

In addition to Mexican kudos, Hugh Iltis was honored closer to home in September 2007, when landowners David and Shelley Hamel dedicated 80 acres of prairie in Marquette County to him. The prairie contains a rich flora and is home to the endangered Karner blue butterfly. The Hamels chose to honor Dr. Iltis, whom they met through shared interests in conservation, because of his inspirational passion for the environment.



Teosinte

- The Contributions of **Anthony B. Bleeker** to Ethylene Signaling and Beyond appears in *The Plant Cell*, Vol. 18, 3347-3349, December 2006, www.plantcell.org © 2007 American Society of Plant Biologists.

- **Prof. Tim Allen** was elected president of the International Society for System Sciences.

- **Prof. Don Waller** received a *Palme Académique* Award, Rank Chevalier (Knight), from the French Ministry of Education in recognition of his contributions to French national education. This award was established by Napoleon, originally to honor eminent members of the University of Paris.

- **Prof. David Baum** was awarded a fellowship from the American Association for the Advancement of Science (AAAS) for his outstanding contributions in the investigation of plant evolution and in teaching and mentoring in phylogenetics, the study of evolutionary relationships between organisms, and evolutionary biology. The AAAS is the largest scientific society in the world. It was founded in 1848, and publishes the journal *Science*. Dr. Baum also received a Guggenheim fellowship, which he will use to work on a book on “tree thinking”: using the metaphor of a tree of life to more accurately conceptualize and communicate evolutionary principles.

- **Kenneth Keegstra**, faculty member from 1978–1993, has been named Emeritus Professor of Botany. Ken expects to spend a significant amount of time in Madison in association with his role in the new Bioenergy Program.

- An article in the previous newsletter described how Prof. **Edgar Spalding's** research group was working on ways of using electronic image analysis to study the growth and development of large number of seedlings for the purpose of searching for phenotypes in mutant populations. The National Science Foundation awarded Professor Spalding a \$1.1 million grant to develop and implement a computer vision platform capable of detecting, quantifying, and classifying subtle changes in development caused by mutations or naturally occurring genetic variations. Such a platform would be expected to accelerate progress toward understanding the physiological or developmental function of each gene. The first phases of the project will be conducted with *Arabidopsis thaliana*, a model plant in the mustard family, but the techniques will ultimately be applied to the study of other species.

Collaborating with Professor Spalding on this project as co-investigators are Professor Amir Assadi from Mathematics and Professor Nicola Ferrier from Mechanical Engineering. Much of the work that established the feasibility of the technology was performed by Nathan Miller, a graduate student in Professor Spalding's lab.

- Two students received **Hilldale Undergraduate/Faculty Research Fellowships**, which include a \$4,000 stipend to the student and \$1,000 to their faculty advisors:

Mary Bacsik (Edgar Spalding, advisor) Molecular Biology

Jennifer Jackowski (Linda Graham, advisor) Botany & Biological Aspects of Conservation

- The Department of Botany award for the highest Undergraduate GPA was awarded to **Kate Legner** in 2007. **Nicole Van Abel** was awarded an Honors Senior Thesis Summer Research Grant in 2006. **Elizabeth Jane Bradbury** received a Latin American, Caribbean & Iberian Studies Field Research Grant in 2007 for her project entitled "Comparison of Oxalate Levels in the *Oxalis Tuberosa* Alliance". **Heather Kaarakka** was awarded the John T. Curtis Award for outstanding research in Ecology by an undergraduate in Botany for 2007. In 2007, three students were awarded the Frits Went Undergraduate Research Award: **Nicole Welnak**, **John Cameron**, and **John Beirne**. **Sarah Wright** was awarded the 2007 Emerging Public Policy Leader Award by the American Institute of Biological Sciences, which is dedicated to advancing biological research and education for the benefit of society.

Congratulations to one and all.

Alumni News & Updates

- **Jane Ayers McAlevey** (M.S. 1937) • Jane set up a scholarship in her name and her husband's name for the study of Botany-Biology at Washburn University in Topeka, Kansas. Her husband, Frank, died last winter. Jane has moved from Texas to California to be near her landscape designer daughter.
- **John Marks** (M.S. 1940) • There have been many changes since I took my Master's jointly in Botany and Agronomy back at the beginning of 1940. World War II came, I married, started having children, and worked for the Bureau of Reclamation as a Soils Scientist in Montana and Arizona. A paper from my dissertation was published in *Ecological Monographs* and a paper from my soils work in the Lower Colorado River desert in Arizona-California

appeared in *Ecology*. Meanwhile I was becoming bored with my repetitive soils work. So, in a sudden move, I decided to become a psychologist, attended Berkeley while working part time at the Berkeley office of the Soils Survey, and received my Ph.D. in Psychology in 1952. Since then, I have been happily engaged as a psychologist and family man, though I retired from the Oregon Health Sciences University in 1988 and have been widowed since 1997.

Through the years, my interest in Botany has been constant as I moved from place to place and from one vegetation zone to another. In World War II, I hiked with the University of Hawaii's Botany Department, collected, and sent pressed specimens back to Norman Fassett at the UW-Madison herbarium. In my time off, I even taught a lab section in Botany 1 at the University's Honolulu campus, a part-time job that was cut short when I was shipped out to the Marianas. At Berkeley, two women turned up whom I had known from the Honolulu department and they gave me access to the UC herbarium, as an aid to my learning the California flora around me. Nowadays my botanizing is confined to tropical travels and to guiding schoolchildren on Nature field trips to the state park close to my house in Portland Oregon. I'm glad the years still leave time for my taxonomic and ecological interests.

- **Mary S. (Hostak) Kakefuda** (B.S. 86) • I went on to get an M.S. in Genetics and Cell Biology from Washington State University. Went to school at Michigan State University and worked on a Ph.D. for three years before I dropped out. Then I went to law school and graduated with my law degree in 1996 from Temple University in Philadelphia.

I worked at a law firm in New York City and Princeton, NJ, before moving down to North Carolina where I worked as an in-house patent attorney at Syngenta Biotechnology Inc. I was particularly hired by Syngenta for my background in plant biology and genetics.

I just left Syngenta in June 2006 and began as a lawyer working part time at a Raleigh, NC, law firm called Hutchison Law Group. Biotech patent specialist, Mary Kakefuda, has joined the firm, bringing Hutchison Law Group to a total of 20 attorneys, 10 paralegals and law clerks and 16 additional support personnel.

I would like to tell students who don't feel that they necessarily want a career in the lab, that being a patent attorney can be very interesting work and it can pay very well too. The United States Patent Office gives the exam to become a patent agent or attorney, and the Botany degree is specifically listed as one of the undergraduate science degrees that is approved

to sit for the exam. All I had to do was apply to take the exam and submit a copy of my diploma. If any students, or faculty, have any interest in a career as a patent agent or attorney, please feel free to contact me with any questions.

I really enjoyed my years at Wisconsin and have tried to get back and visit and see a football game or two. **Judith Croxdale** was my undergraduate advisor and she was fabulous. I also worked with Stan Duke and Cynthia Henson in the Agronomy department on my senior thesis. It was really special at Wisconsin to have so many women advisors. I still have many of the botany text books on my office shelf for reference.

● **William Kleindl** (B.S. 87) • After graduating with the Botany degree I pursued a Secondary Education Certificate in Biology (1990) then went to the University of Washington-Seattle where I completed an M.S. degree in Aquatic Ecology (1995). I started the Naiad Aquatic Consultants firm and recently attended the 2006 Northwest Water Policy & Law Symposium where three water issues handled by State and Local governments were discussed, and identified potentially-useful policy approaches.

● **Ricarda Riina** (M.S. 03; Ph.D. 06) • Riki is currently a Research Fellow at the Dept. of Ecology & Evolutionary Biology at the University of Michigan in Ann Arbor.

In Memoriam

● **Emma Luella Fisk** (1892-1972)(B.A. 1914, Wellesley College; M.A. 1921 & Ph.D. 1925, UW-Madison) • Emma was born on July 28 in Newark, NY (located in Wayne County); graduated with a B.A. in Botany & Mathematics; M.A. in Botany; and Ph.D. in Botany & Cytology. She served as a graduate assistant at Wellesley College, MA, from 1914-1916; was an instructor at Sweet Briar College, VA, from 1916-1918; an instructor at Wellesley College from 1918-1920; a teaching assistant at UW-Madison Botany Dept. from 1920-1923; and an instructor at UW-Madison Botany Dept. from 1923-1926. She became an Assistant Professor in Botany in 1926; was elevated to Associate Professor in Botany in 1937; retired in 1963; was a Visiting Professor in Botany at Wellesley College Spring Semester 1940; and served as a consultant for Intermittent Service in the War Dept. at Camp Detrick MD 1945-1947.

Dr. Fisk taught the following courses at UW-Madison: Botany 1-General Botany; Botany 2-Advanced General Botany; Botany 100-Thesis; Botany 106-Morphology of Spermatophytes; Botany

108-Morphology of Angiosperms; Botany 112-Morphology of Bryophytes; Botany 113-Morphology of Pteridophytes; Botany 117-Structure of Economic Plants; Botany 122-Special Morphology; Botany 129-Classification of Cultivated Plants; Botany 130-Classification of Native Plants; Botany 131-Identification of Trees & Shrubs; Botany 132-Plant Anatomy; Botany 138-Dendrology; Botany 154-Evolution of Plants; Botany 164-Principles of Ecology; Botany 180-Advanced Independent Study; Botany 200-Research; Botany 214-Morphology Seminar.

Emma has the distinction of not missing a regular class or staff appointment from 1923-1963 except when she was called home to attend the funerals of two immediate family members.

A partial list of graduate students advised by Emma: Father Lazarus Macior; Boyd Witherow; Ralph Williamson; Ann Morneau; Helen Godfrey; Roy Christoph; Sister Bernard; Charlotte Hiller; Marie Scott; James Unger; Katharine Buell; William Millington; Paul Mahlberg; Genevieve Doyle; Lora Bond; Helen Hewett Hamilton; WB Ennis; J.R. Dogger; Rhona Leonard; E.J. Doyle; D.J. Hagedorn; Mildred Southwick; M.J. Thirumalachar; J.K. Thornton; P.B. Whitford; J.G. Ross; F.W. Stearns; Hisako Yokayama; S. Prasad; Marion Aldred; P.B. Gibson; E.M. Lederberg; R.K. Oldemeyer; F.L. Patterson; G.E. Rush; M.A.K. Ali; M.B. Tesar; R.W. Hougas; W.W. Weber; G.E. Geeseman; Carol Voss; R.E. Wagner; T. Ronningen; O.H. Calvert; Eleanor Dilks; Y. Desmarais; M. Futrell; T.A. Gochnauer; H.J. Gorz; W.R. Childers; W.J. Drapala; D.G. Guravich; T.P. Hernandez; Mohammed Japar; E.H. Newcomb; J.F. Schafer; T. Theis; Acton Brown; L.G. Holm; Vivian Bull; Marjorie Cromer; Mary Morris; Virginia Jackson; Mary Skarakis; Leah Jolivet; Mabel Kust; Ruth Mackie; and Katharine Moore.

Emma achieved professorial rank during a time when that was not quite "proper," and she had to fight for equal treatment (with no affirmative action program.) She was active in departmental meetings, served on many university committees, and was an active member of Phi Beta Kappa; Sigma Xi; Sigma Delta Epsilon; Wisconsin Academy of Arts, Sciences, and Letters; Sigma Epsilon Sigma; American Association for the Advancement of Science; Botanical Society of America; Torrey Botanical Club; American Institute of Biological Sciences; International Society of Plant Morphologists; American Association of University Professors; University Club at UW-Madison; and Madison Civics Club. Emma was listed in the following publications: *Who's Who Among American Women*; *Who's Who in the Midwest*; *Who's Who in American Education*; *Who's Who in Wisconsin*; and in the *American Men in Science*.

● **Charles Leonard Huskins** (1897-1953) ● (by William Grant.) Charles Leonard Huskins was the first Professor of the first Department of Genetics, which was formed at McGill University in Montreal, Canada in 1934.

Professor Huskins was born on November 30, 1897, in Walsall, England, a community north of Birmingham. As a preteen he emigrated with his parents (William Huskins and Annie Clara Darby Huskins) to Red Deer, Alberta, Canada. During World War I he served overseas in the Canadian Infantry (1916), but shortly joined the Royal Flying Corp (later the RAF) and served as a flying officer in England and France (1917 to 1919). After the war he returned to Canada and first studied botany at the school of agriculture in Olds, Alberta, and then enrolled at the University of Alberta where he held an appointment as Assistant in Plant Breeding from 1922-25. He received the degree of Bachelor of Agricultural Science in 1923 and the Master's degree in 1925. He was awarded an "1851 Exhibition Overseas Scholarship" for graduate study at Kings College, University of London. In 1927 he received a Ph.D. degree, and on the basis of his published research, he was awarded the D.Sc. degree in 1934. From 1927-1930 he worked in England under William Bateson as a research fellow in cytology at the John Innes Horticultural Institution.

Professor Huskins began his teaching career at McGill in 1930 as an Associate Professor of Botany. Within four years he was promoted to Professor of the new Department of Genetics, which he initiated and chaired. He considered Genetics to be a distinct discipline that should be separated from, though integrated with, both Botany and Zoology. Professor Huskins then formed an active research Center in Cytogenetics, which gained world recognition. In 1938, he was a visiting Professor at the University of California. In 1942, he was awarded a Guggenheim Fellowship and spent the year in the Department of Zoology at Columbia University where he prepared a book on the cytology and genetics of plants, animals and man. While at McGill he actively supported the National Research Council of Canada and helped to develop and improve the Canadian Journal of Research. In 1934, he was elected a Fellow of the Royal Society of Canada. Several Canadian students of Prof. Huskins, J.M. Armstrong, A.W.S. Hunter, R. Merton Love, Howard B. Newcombe, Arnold H. Sparrow, S.G. Smith and G.B. Wilson graduated from McGill and became noted scientists.

In 1957, the Genetics Society of Canada inaugurated the Huskins Memorial Lectureship in honor of Professor Huskins. The first five Huskins lectures were given by (1) Herbert Stern, University of

California-San Diego, "Perspectives in Chromosome Physiology", Proc. Genet. Soc. Can. 2: 3-8, 1957; (2) J.R. Fryer, University of Alberta, "Genetical-Biochemical Contact Areas", Proc. Genet. Soc. Can. 3: 6-13, 1958; and (3) Arne Muntzing, Institute of Genetics, Lund, Sweden at the Xth International Congress of Genetics in Montreal, 1958, "A New Category of Chromosomes", Proc. X Int. Congr. Genet. 1: 453-467, 1958; (4) G.B. Wilson, Michigan State University, "Studies on the Control of Mitotic Activity", Can. J. Genet. Cytol. 1: 1-9, 1959; (5). Curt Stern, University of California, Berkeley, "Dosage Compensation-Development of a Concept and New Facts, Can. J. Genet. Cytol. 2: 108-118, 1960.

In 1945, Professor Huskins left McGill to become Professor of Botany at UW, where he established a section devoted to experimental cytology. In 1947, he formulated an integrated curriculum resulting in the program of Integrated Liberal Studies. Dr. Huskins' vision of liberal education and his readiness to conceive the place of the biological sciences in the total pattern of studies greatly aided the new curriculum.

He was internationally renowned and received many honors. He worked for short periods at research institutions in Germany, Russia, Denmark, Sweden, Holland and France. He was active in many professional organizations and despite his Wisconsin residence, in 1951 he became President of the Biological and Medical Sciences Section of the Royal Society of Canada.

In 1923 Dr. Huskins married Margaret Villy, a native of Manchester, England, who was at the time a lecturer in English Literature at the University of Alberta. She was a person with exceptional artistic and spiritual qualities, which contributed greatly to their home and to the community. She founded the first Unitarian Society's Play House Nursery School in Madison. Mrs. Huskins died on March 11, 1953, preceding her husband who died on July 26, by only a few months. They had three children: Sheila Wincot, Olwen Margaret and John Michael.

Professor Huskins pioneered research on "the origin of false wild oats" which he concluded arose as a result of the irregular distribution of chromosomes in meiosis in *Avena sativa* as a result of its hexaploid constitution. He then extended the work to the origin of speltoid forms of wheat. Later, he showed that a hybrid of the genus *Spartina* had the chromosome number predicted on the basis of chromosome doubling—one of the first well-authenticated examples of the naturally occurring evolution of a new plant species. The chromosome numbers were later corrected, but this did not detract from the basic principle that he established.

Professor Huskins was a liberally educated scientist. In lectures to undergraduates, he related the significance of the biological sciences to the broad scheme of education. Beyond the campus, he was an enthusiastic member of the Madison Literary Society and a member of the Madison Unitarian Society—on several occasions occupying the pulpit. He also helped a number of refugee scientists to reestablish themselves in North America.

Charles Leonard Huskins was a stimulating conversationalist entertaining and quick to appreciate the humorous side of a subject. His vivid personality will live on in those who remember this man witty and quick of movement and speech. His written contributions will long preserve his scientific memory.

I thank Suzanne Bader for supplying background articles. A longer version of this biography resides in the Botany Department Archive.

● **Willard Paul Bitters** (MA '40; Ph.D. '42) • 91, of Riverside, California, passed away on March 30, 2006. Willard received his B.A. degree from St. Norbert College in 1937. He retired as Professor from UC-Riverside.

● **Jeanne Brumbaugh** (M.A. '50) • 80, of Minneapolis, Minnesota passed away on October 1, 2006. Jeanne received her B.A. degree from Butler University in 1948 and her M.A. degree from California Lutheran University in 1983. Jeanne retired as the Principal of General Studies at the Yeshiva Rau Isacsohn school.

● **Oscar Hugh Calvert** (M.S. 45; Ph.D. 48) • 93, Emeritus Professor at the University of Missouri-Columbia passed away on February 21, 2007. Oscar was born in Dallas, Texas; received his B.S. degree from Oklahoma State University in 1943 and began his academic career at UM-Columbia in the Field Crops department and then retired from the Plant Pathology department.

● **Catherine Mose Caronna** (B.S.E. '34; M.S. '36) • 94, of Encinitas, California, passed away on April 4, 2006. Catherine's M.S. research focused on epidermal outgrowths of the Leguminosae of Wisconsin.

● **William Brice Ennis, Jr.** (Ph.D. '48) • 80, of Plantation, Florida passed away on July 1, 1997. Dr. Ennis received his B.A. and B.S. degrees from the University of Tennessee in 1939; his M.S. degree from the University of Maine in 1941. William completed his Ph.D. with Emma Fisk, with research on responses

of certain plants to O-isopropyl N-phenyl carbamate. His academic career at the University of Florida began as a Center Director; he retired as Professor.

● **Arlene M. Johnson Granberg** (BSE '35; M.S. '40) • 91, of Appleton, Wisconsin passed away on December 25, 2006. Arlene was born in Portage, Wisconsin. Her academic career began as a Math & Science teacher at Beaver Dam High School; then as a Lecturer at UW-Green Bay; and then as a Lecturer in Botany at Rosary Hill College. Arlene moved back to WI to serve as a Math and Science teacher at Appleton Schools, then moved again to TN where she served as the Math teacher for the Knox County Schools.

● **David Frank Grether** (B.P.H. '47; M.S. '49) • 86, of Saint Cloud, Minnesota, passed away on January 12, 2006. David was born in Neillsville, Wisconsin. His research focused on population studies of Wisconsin plants. David retired from Saint Cloud State University as Professor Emeritus.

● **James Marvin Helm** (B.S. '57; M.S. '70) • 70, of the DNR passed away on March 15, 2005.

● **Marian Caine Jackobs** (B.A. '40; M.A. '44) • 85, of Urbana, Illinois, passed away on August 22, 2005. Marian was born in Stoughton, WI. Her research focused on chromosome behavior in a hybrid between *Melilotus altissima* and *M. alba*. She retired from the Cunningham Childrens Home where she served as President of the Board.

● **Robert James Loeffler** (M.S. '50; Ph.D. '54) • 83 of Moorhead, Minnesota, passed away on March 16, 2006. Robert was born in Worcester, Massachusetts and received his B.A. degree from Syracuse University in 1948. His research at UW concerned new methods of evaluating distributions of planktonic algae in freshwater lakes.

● **Mabel Lowsma** (M.A. '30) • 103, of Denver, Colorado, passed away on June 11, 2006. Mabel was born in Columbus, Nebraska and received her A.B. degree from Wayne State University in 1924. Her research at UW focused on cytology of orchid mycorrhizae.

● **Elizabeth Linn Mackay** (M.A. '35, Ph.D. '37) • 94, of Columbus, Ohio passed away on February 21, 2006. Elizabeth was born in Lafayette, Indiana, and received her B.S. degree from Purdue University in 1933. At UW, she studied variant chromosome numbers in *Sphaerocarpos*.

- **Marion Nichol** (MA '46; Ph.D. '49) • 82, of Bellevue, WA taught in the biology department of Case Western Reserve University before leaving academia to raise her family and volunteer with a focus on environment quality (clean air and water), land use planning, and historical preservation. Marion received her B.S. degree from the University of Rhode Island in 1944. Her research at the UW focused on proliferation and shoot formation in orchid seed and tissue cultures. (Oct '06)
- **Laurie Ann Noll** (B.S. '81, M.D. '86) • 47, of Middleton, WI, died on Saturday, August 5, 2006 after a long, courageous battle with multiple sclerosis. She was first and foremost a wife and mother, a musician, and a doctor. After her illness, she became an accomplished athlete in adaptive aquatics. Her activities and interests included botany, growing orchids, volunteering at Elm Lawn School, reading, and making and selling of beaded jewelry with her daughter.
- **Donald Lloyd Oakwood** (B.S. '57) • 73, of Burlington, WI, passed away on June 10, 2007. Donald was born in Menominee, Michigan. He retired from Burlington School District after serving as a Science Teacher.
- **Art Oehmcke** (B.A. '37) • 93, of Spooner, WI, was a retired district director for the DNR as well as a respected natural resources leader and musky management biologist. He was responsible for management of 4,000 lakes and 4,000 miles of trout streams in northeastern WI from 1941 to 1969. Art was inducted in the National Fresh Water Fishing Hall of Fame in 1993, and the Muskies, Inc. Hall of Fame in 1994. He was among the guides for musky expeditions for President Eisenhower, Ted Williams, Gypsy Rose Lee, Edward R Murrow & Prince Harald of Norway. Art received his M.P.A. degree from Harvard University in 1953. (Dec '06)
- **Grace Marck Ranek** (B.S.E. '35) • 93, of Carlisle, Pennsylvania, passed away on December 13, 2006. Grace was born in Burlington, WI, and began her professional career by supervising the Red Cross Blood Bank in Chicago, then serving as a Medical Technologist at Milwaukee Hospital before joining the US Navy as a WAVE Officer. Grace retired in 2000.
- **Joseph William Rhodes** (M.P.H. '32) • 98, of Beloit, WI, passed away on June 15, 2004. Joseph was born in Reeseville, WI, and received his B.E. degree from UW–Milwaukee in 1926. His research focused on

the study of a Dodge County peat bog. He retired from the Beloit School District as the Assistant Superintendent of Schools.

- **George Roseman** (M.S. '40) • of Hughson, CA was a teacher, administrator and advisor at California State University-Chico for 25 years. (Aug '06)
- **Laurence E. Slavin** (M.A. '62) • 77, of Chandler, Arizona, passed away in 2007. Laurence received his B.A. degree from St Norbert College in 1955. He began his academic career as a teacher at the Alhambra High School in the Phoenix Union School District. He retired from the Rio Salado Community College after serving as an Instructor for the County of Maricopa Community College District.
- **Harvey Julius Stangel** (BS '49; M.S. '50; Ph.D. '53) • 83, of Highland Park, New Jersey, passed away on December 11, 2006. Harvey was born in Kewaunee, WI. His research focused on the effect of fertilization, height and frequency of cutting on the development of a Kentucky bluegrass turf. Harvey started his own agricultural consulting firm and served as the Director of the New Jersey Plant Food Association before retiring in 2000.

STAFF THEN & NOW



1998

What a difference nine years makes. Or maybe not. The top photo was featured in one of our first Alumni Newsletters. We resurrected it for comparison with the lower photo, taken in the Botany Office on one of the many occasions, complete with goodies and drink, that we devised to wish Diane Derouen a happy retirement. You can see 10 faces appearing in both photos: Mary Bauschelt, Mike Clayton, Ted Cochrane, Diane Derouen, Kandis Elliot, Barbara Erlenborn, Mo Fayyaz, Claudia Lipke, Lorraine Pilgrim, and Mark Wetter.

2007



TIDINGS FROM THE GREENHOUSES . . .



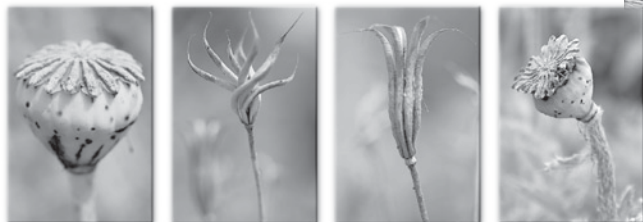
The remodeled greenhouses required several receptions to mark the occasion, including a garden bratwurst luncheon for the Physical Plant workers who also contributed to the project.



Little Stinker put forth a mighty effort this July to gas everyone out of the greenhouses. After a gorgeous bloom, the arum rested until the end of September, when it reappeared with a double sprout.



End of garden flowers marks the seeds of a new beginning. Alas, the campus American Elms are ending their stately presence on Bascom Hill, marking only the lasting effects of yet another ecological disaster.



... AND GARDEN



Winter snow and spring frost gave way to broken-pipe floods during the new garden's first winter.



The pond and flower beds support an ever-growing community of insects. Many butterflies and dragonflies have been documented by Prof. Edgar Spalding on the Botany website.



Spring semester 2007 comes to a close with student awards and a garden banquet.

Fall semester begins with a reception for new Botany students, and a final farewell to Diane.



BOTANY GARDEN SUMMER 2007

*The Woodland
Garden
featured hundreds
of lilies*





COMMEMORATIVE TILE FOR THE CLASS OF '52 PLAZA. \$520

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- ☐ ELDON AND JOY NEWCOMB FUND IN BOTANY—an unrestricted fund for any purpose or interest of the department.
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- ☐ CURTIS FUND—provides an award for the best Ecology undergraduate student paper.
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- ☐ JUDITH CROXDALE FUND—memorial fund to support women beginning research careers.
- ☐ FOLKE SKOOG FUND—memorial fund to support Dr. Skoog’s research and teaching initiatives.
- ☐ BLEECKER FUND—memorial fund for Plant Imaging Facility.

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- ☐ JOHN J. DAVIS FUND—supports research activities of the department, including graduate student fellowships, travel support, and funds to provide speakers for the Botany Colloquium series.

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Sue Bader
Department of Botany
University of Wisconsin-Madison
430 Lincoln Drive
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Please tell us what you've been up to since graduation and any special items you'd like to share in the next newsletter. We'd also be interested in any thoughts you have about your educational experience here. Attach extra pages as necessary. PHOTOS WELCOME!



This newsletter is published by the Department of Botany at the University of Wisconsin, Madison, for alumni, colleagues and friends. Dr. Joy Zedler and Suzanne Bader, editors; Kandis Elliot, art and layout; Claudia Lipke, photos. Submissions are welcome. Please send comments, ideas, and photos to:

Alumni News
Department of Botany
430 Lincoln Drive
Madison WI 53706-1381

Fax: 608-262-7509
Phone: 608-262-0476
email: smbader@wisc.edu

www.botany.wisc.edu

University of Wisconsin
Department of Botany
Room 132 Birge Hall
430 Lincoln Drive
Madison WI 53706-1381

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