

YALE ENVIRONMENTAL NEWS

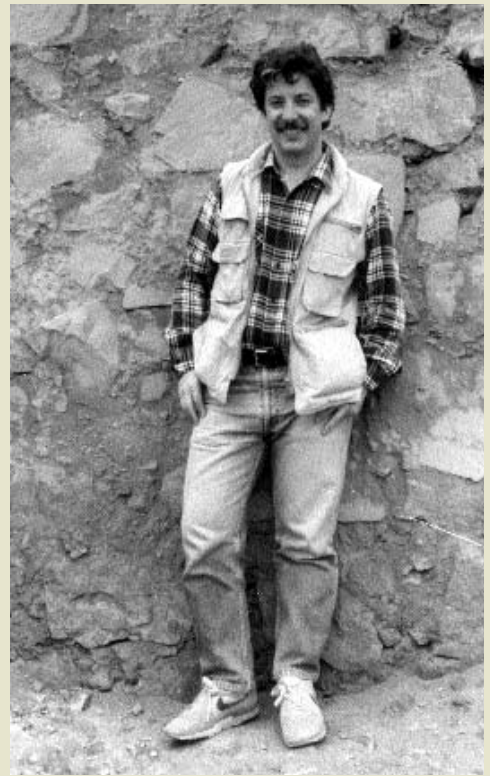
spring 2002
vol. 7, no. 3

REFLECTIONS ON THE PEABODY MUSEUM

By Richard Burger

A successful natural history museum should be a thing of wonder—a place capable of inspiring awe in the visitor and excitement about the continuing breakthroughs by scientists. At the same time, behind the scenes and invisible to the public, the Museum's collections must be preserved for future generations and made accessible for study and analysis by scholars and students. When I took over the directorship of the Peabody Museum of Natural History over seven years ago, I was thrilled to have the chance to move the Museum closer to these goals. Nonetheless, having served on the Peabody's Curatorial Board since 1983 and having been briefed by my predecessors, I was painfully aware of how much had to be accomplished before these ideals could be fully realized. As I reach the end of my tenure as Director, I am struck both by how much progress has been made and, at the same time, how much remains to be done. In this short overview, I will touch upon some of the advances to date and highlight some of the important measures that have not yet come to pass.

For most of New Haven and Southern New England, the public side of the Peabody Museum is the only part that exists. I have always been struck by the genuine affection with which the Museum is held by people of all ages and walks of life, and we are fortunate to have this foundation of good will upon which to build. The role of Peabody in providing a bridge between Yale and its surrounding community is widely acknowledged and appreciated. Whether through the school programs serving over 40,000 students per year or the use of the Museum for family visits on the weekends and holidays, the Peabody has touched the lives of almost everyone in this region. Yet, for the Peabody Museum to be successful, it must continually renew itself. The magical power of a museum to inspire the visitor relies on seeing extraordinary specimens, but it also depends in part on the quality of the ambiance and the effectiveness of the exhibitions in communicating with non-spe-



Richard Burger during his excavations at the 3800 year-old pyramid complex of Mina Perdida on the central coast of Peru.

cialists. In line with this conviction, one of my first goals at the Peabody was upgrading both the aesthetics of the museum spaces and the quality of its exhibits. A multi-colored plastic information desk was replaced by a carefully designed cherry wood installation, crafted by the Peabody's skilled construction shop, and the dark central foyer was illuminated with new lighting fixtures and enlivened by banners. A temporary exhibit that had perdured for decades was removed to reveal the original French Gothic-style windows, thus filling the dark central stairway with light. An original bronze mask was commissioned to replace the cardboard tiger as a repository for unwanted chewing gum. These and other measures, known collectively as the Threshold Project,

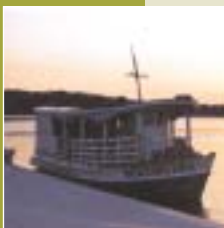
continued on page 3

INSIDE THIS ISSUE

Peabody Museum
Exhibits and Offerings
page 5



Gaylord Donnelly
Environmental
Fellows
page 10



Undergraduate
Environmental Summer
Internships 2002
page 17





REFLECTIONS ON THE PEABODY MUSEUM *(continued from page 1)*

were small steps, but collectively they created an entirely different mood for visitors entering the Peabody and added to the quality of their visit to the exhibitions.

When I took on the directorship, I frequently heard the left-handed compliment that the Peabody was beloved because it never changed. My feeling was that this reflected a lack of dynamism in the exhibitions and to change this impression we removed some of the older exhibits, including an exhibit on the indigenous cultures of the Great Plains that had been originally installed in 1937! We sought out traveling exhibits focusing on subjects such as Amazonian featherwork or fossils as artwork, and we also initiated in-house exhibits, such as the ones on children's nature books and the African cultural roots of the Amistad rebellion.

The renewed sense that things were continually changing at the Peabody was reinforced by establishing an active public events program. While weekend and other activities had occurred before at the Peabody, there had never been a full-time events coordinator and the creation of this position led to a threefold increase in our activities. Among the most memorable of these was one on extraterrestrial aimed at undergraduates. It combined a talk on the possibility of life on other planets by Karl Turekian, Curator of Meteorites and Planetary Science, with a three-D science fiction movie. The auditorium was packed, as it was when we brought controversial adventurer Thor Hyerdahl to the Museum. The presence of staff focusing on events allowed us to begin sleep-overs known as Dino-Snores in the Great Hall. Aiming at an older audience, we began a series of gala events in coordination with new or temporary exhibits. Thus, we staged a *Night on the Nile* gala when we reopened our newly refurbished exhibit *Everyday Life in Ancient Egypt*, and a *Night on the Yangtze* gala when we unveiled our exhibit and international symposium on *China's Feathered Dinosaurs*. Another important innovation was the creation of a two-day event focusing on environmental equity in celebration of Martin Luther King Day. This event now draws over 3,700 visitors and is the largest in Connecticut. These and other measures have helped make the Peabody a more

exciting place, and perhaps for this reason the Museum has won the Advocate's Readers Poll for the Best Museum/Gallery every year since 1996! The creation of a vibrant Biodiversity Fellows Program initiative strengthened our collaboration with the New Haven school system and broadened our outreach into local classrooms and the area of curriculum development.

The public role of the Museum, however, is only a part of the Peabody's mission and, from the perspective of the students and scholars at Yale, it is the research and teaching potential of our remarkable 11 million plus specimens that is most exciting and important. While the research on these materials drive our public exhibitions, much is done in the collections that will never reach the public. Throughout my time as Director, I wrestled with the problem of protecting these collections for future generations in a 1925 building that was no longer adequate for this purpose due to leaks and fluctuations in temperature and humidity. The installation of an air-handling system, thanks to support from the State of Connecticut and the University, and the addition of a new roof (crucial for the protection of Rudy Zallinger's famous fresco) were crucial measures to protect the materials on display. Even more important was the creation of the new Class of 1954 Environmental Science Center (ESC), which will soon house some 70% of the Peabody's collections in state-of-the-art conditions. I began work on this project several months before I officially became Director and continue to work on it to this day. The completion of this project with its basic program still intact is of enormous long-term importance for protecting the Peabody collections and making them accessible for teaching and research. The impact this new building will have is unknown, but I predict that the creation of this new facility will help to revive research on the Peabody collections and make them central to the education-

Left: Computer simulation of the proposed bronze Torosaurus statue to be located overlooking Whitney Avenue & Sachem Street.

Right, top: Richard Burger

Right, bottom: New Haven children enjoying the activities at the Martin Luther King Day Celebrations.

William Sacco



William Sacco



REFLECTIONS ON THE PEABODY MUSEUM

Top and Middle: Peabody Museum collections being moved into their new space in the ESC.

Bottom: Rudy Zallinger's painting of the *Age of Reptiles* now graces the side of a fossil fuel container in New Haven's Harbour.



William Sacco (3)

al experience of undergraduate and graduate students at Yale.

The improved conditions for our collections has been paralleled by the renewal and growth of our Curatorial Board, which now has seventeen curators and seven emeritus curators, drawn from the entire University, including the Faculty of Arts and Sciences (FAS) the School of Forestry & Environmental Studies (FES), the School of Epidemiology & Public Health (LEPH) and the School of Medicine. In order to support the surge of interest in natural history research, we reorganized our scientific publishing activities, bringing a professional scientific editor on board, and obtaining endowment funds for our technical publication series. These publications, which highlight the Peabody collections and the work of its researchers, are once again appearing on a regular basis and are helping to reestablish the Peabody as a major research center in the world of natural history.

As the foregoing remarks indicate, I think that we have accomplished a great deal. In all cases, this was made possible by the collaboration of a wonderful Board of Curators, a remarkable staff of dedicated and skilled employees, and, of course, the support of Provost Alison Richard, Yale President Rick Levin and the rest of the University. There remains much to do, however, and I want to devote the remainder of this piece to future needs. Several of the Peabody Museum's most important collections could not be fit into the ESC and these crucial materials, which include Anthropology and Vertebrate Paleontology, remain at risk. Plans exist to create adequate conditions for them in other buildings, but to implement these plans will be costly and require much additional work. The old storage rooms that are being emptied of collections destined for ESC create new opportunities for public education and other purposes. These, and other changes in the layout of the Museum, were outlined in a thirteen-point master plan produced by museum specialists Sears and Russel. One particularly exciting recommendation in this plan is to create a mod-

ern auditorium accessible to the ESC on the Museum's first floor.

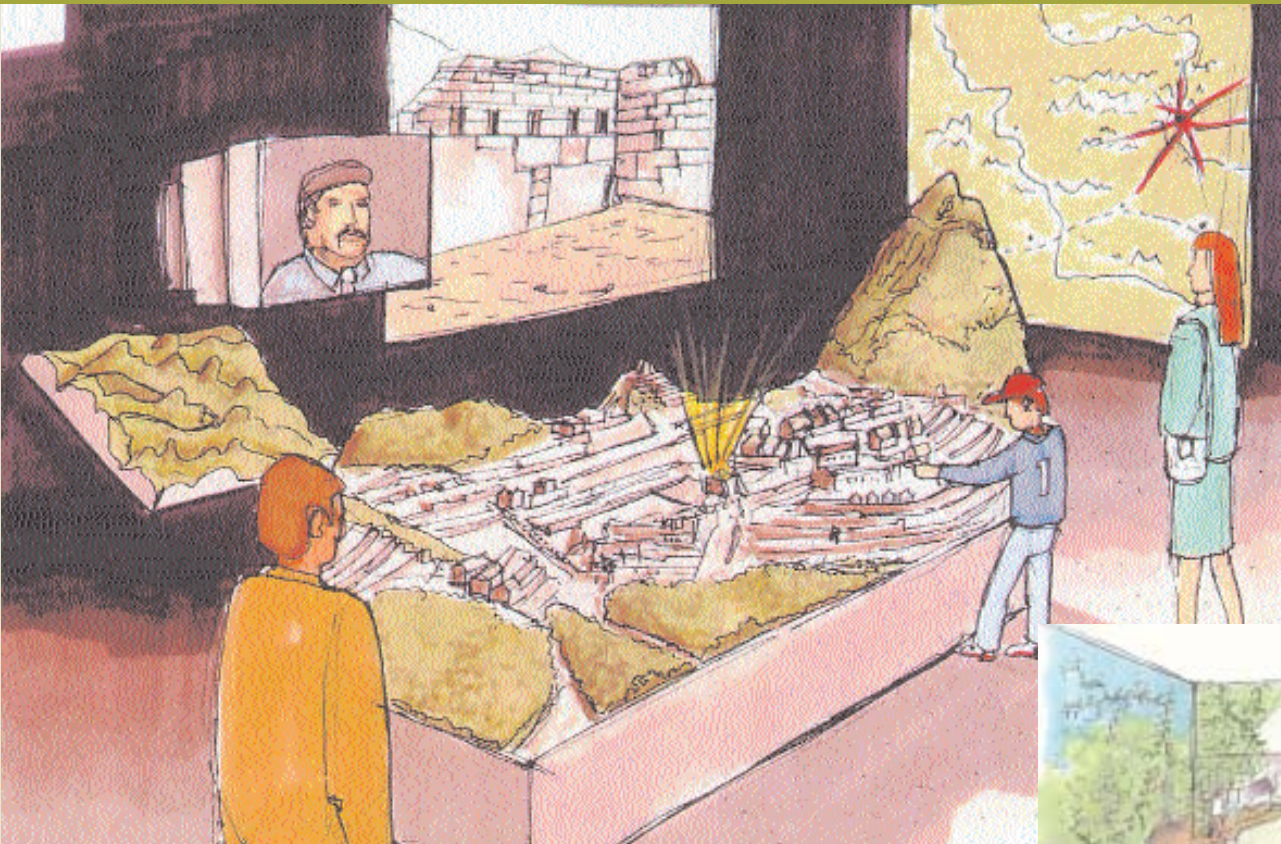
Even with the changes that have occurred and those recommended by the Sears Plan, the Peabody will fall short of its potential until it has significantly more exhibition space. New exhibits on Machu Picchu and on Human Origins are nearing completion, but their installation will eliminate the space available for temporary exhibits. Other subjects, such as the beginnings of life on this planet, cry out for new long-term exhibits, and no modern museum can flourish without temporary exhibition spaces. The creation of additional exhibition space, whether by building new halls adjacent to our old building or transforming part of our second floor from administrative to public space, must be a priority for the future.

Finally, the Museum needs to find new ways of capturing the public's imagination. The reproduction of the Age of Reptiles Mural on one of the oil tanks adjacent to the Quinnipiac River Bridge at the beginning of my term was a step in the right direction. We now have developed an even more ambitious project that will place a 22-foot bronze statue of a Torosaurus in front of the Peabody Museum. Designed by staff artist Michael Anderson, this new addition to the Peabody landscape has been approved by the University and has already attracted enough support to ensure its completion in the not too distant future.

It has been a remarkable seven years for the Peabody Museum and the prospect for the future is no less exciting. While I will be returning to Yale's Anthropology faculty to resume teaching and archaeological research, I look forward to working with future directors to make the Peabody Museum even more successful for the University and the broader community.

A handwritten signature in black ink that reads "Richard L. Burger".

Richard L. Burger



Left: The Curator's Tour uses a six-minute video to guide the visitor through a large-scale three-dimensional model of Machu Picchu, selectively lighting portions of the site model to expose the visitor to the layout and different activity areas of the royal estate. The model is complemented by wall-mounted high-relief topographic maps placing Machu Picchu within the context of the Andes.

Below: The Orientation Theatre will serve as a visitor's introduction to Machu Picchu; the modern LCD-based projector will present six-minute film providing an introduction to Peru and its diverse geographic environment, an overview of Inca politics and history, and a survey of the unusual ecological and geological setting of Machu Picchu and the enormous biodiversity of the cloud forest environment in which it is situated.



PEABODY RECEIVES CHC GRANT TO FUND AUDIO VISUAL COMPONENTS OF MACHU PICCHU EXHIBIT

The Connecticut Humanities Council has awarded the Yale Peabody Museum a Cultural Heritage Development grant of \$75,250 in support of the Museum's upcoming exhibit *Machu Picchu: Unveiling the Mystery of the Incas*. The funding, designated to cover a significant portion of the exhibit's audiovisual production costs, is the third and by far the largest grant the CHC has given the Museum in support of the Machu Picchu project. According to Museum Director Dr. Richard Burger, "This grant is especially significant because it funds the construction of two important components of the exhibition—the Orientation Theatre and the large model of the site that serves as the focus of the Curator's Tour video."

Slated to open in January of 2003, the exhibition is in part a reflection of the research and findings of Director Burger and Archaeologist Lucy Salazar of the famous archaeological site Machu Picchu, a country palace located in the highlands of Peru used by the Inca elite as a retreat from the empire's capital, Cuzco. The creation of the exhibit will provide the Museum with a permanent venue to display its extensive Machu Picchu collections, excavated in by Yale archaeologist Hiram Bingham in 1912. Furthermore, the exhibition serves as a chance for the museum to employ the latest technology to create an interactive learning experience that explores the scientific methodology behind the archaeological process.

The CHC is an independent, publicly supported foundation, established in 1973 as a

state program of the National Endowment for the Humanities, with the objective of increasing public appreciation for, understanding of, and exposure to the humanities in Connecticut. The CHC's mission was enlarged in 1995, when the Connecticut General Assembly charged the CHC with administering the Cultural Heritage Development Fund, containing funds geared toward promoting Connecticut's cultural heritage as a significant resource for the tourism industry. According to Dr. Burger, the CHC has been a critical to bringing the project to fruition. "The support of the Connecticut Humanities Council throughout the planning process has been crucial and for it we are deeply grateful," stated Dr. Burger, adding, "Lucy and I are delighted about the continued support of the CHC."



photo credit here

TOROSAURUS IS COMING!

Peabody Museum Preparator Michael Anderson couldn't be happier. That's because the Peabody Museum's graphic design team just put the finishing touches on a digitally created image previewing the bronze *Torosaurus* statue prototype designed by Anderson, which will grace the Museum's entrance for years to come. The completion of the graphical representation kicks off the campaign to fund the statue's construction, which also means that Anderson is one step closer to actually sculpting the giant dinosaur.

The project to create the giant *Torosaurus* is the brainchild of Peabody Museum Director Richard Burger, Curator of Vertebrate Paleontology Jacques Gauthier, and Anderson, who all felt that the Peabody lacked a defining symbol to reinforce the Museum's role and significance in the New Haven community. So the three set upon a mission to fill the void—

Anderson proceeded to create a series of possible mock-ups of a variety of dinosaurs to present to the Peabody's Board of Curators, who chose the design for the future construction of a life-sized, bronzed *Torosaurus latus*, a majestic horned dinosaur that lived 68-65 million years ago.

Torosaurus latus has long been significant to the Peabody Museum. In 1891 two large skulls of an unidentified dinosaur were sent to Yale from S.E. Wyoming. Peabody Museum Director and Paleontologist O.C Marsh described and named *Torosaurus* in September of 1891 and further elucidated his description in January 1892. Professor John Ostrom, eminent Yale paleontologist and Curator Emeritus of Vertebrate Paleontology, also focused his research on Ceretopsian jaw mechanics and *Torosaurus* taxonomy. Very few reconstructions have been made of *Torosaurus*; the full-scale sculpture in front of the Peabody would be the first of its kind.

The dinosaur itself will stand at nine feet tall and twenty-one feet long. Mr. Anderson's work will represent the final stage of the project—from conception, model making and sculpting to molding and casting a wax prototype to be sent to the foundry. The foundry will cast the dinosaur in pieces, each of which will get welded together, chased, and finally colored with a patina. The base of the statue, made of 70 tons of local Stony Creek pink granite, will rise thirteen feet from the ground (making its height an impressive 22 feet, or over two stories, in total). The stone sculptor, Darrell Petit, will oversee the quarrying, lifting, shaping and hauling of granite, as well as the engineering of a footing.

As of now, there is no projected completion date for the *Torosaurus* statue; it is dependent upon securing the necessary funding. Recently, after having viewed a full sized steel-frame and wire mock up temporarily erected to mimic the future statue, the project was cleared by Yale University's Outdoor Sculpture Committee. It is the hope of the Board of Curators that it will appear at some point during the next few years—until then, we can only imagine how the gigantic statue will tower over Peabody visitors in the future.

Peabody Preparator Michael Anderson on the Torosaurus Statue

In December 1999 Museum Director Richard Burger and Vertebrate Paleontology Curator Jacques Gauthier approached me about creating a life-sized dinosaur sculpture for the front of the museum. Dr. Gauthier wanted a very accurate model of the sculpture for presentation, so sent me to work with Dr. Ralph Chapman at the National Museum of Natural History at the Smithsonian Institute, the paleontologist in charge of the recent remounting of their *Triceratops*. Using animated computer models and garnering advice from specialists worldwide, Dr. Chapman had recently created the most accurate skeletal reconstruction of *Triceratops* to date.

Because *Triceratops* and *Torosaurus* have very similar postcranial (from the neck down) skeletons, Dr. Chapman suggested using the more widely available *Triceratops* bones for the reconstruction. A 1/6 scale skeletal model



(approximately 42" in length) of the Torosaurus was constructed and posed in the stance of the Peabody sculpture. Dr. Chapman and his team worked for several hours to adjust the skeletal anatomy to their liking.

Once the skeleton was created and approved, the muscles had to be added. Cutting-edge research on dinosaur muscular anatomy is currently underway at Yale University. Dr. Gauthier introduced me to one of his graduate students, Takanobu Tsuihiji, who dissects extant animals with evolutionary relationships to the dinosaurs. I spent hours researching his anatomy texts of iguanas, alligators, and birds, reviewing the various muscles and their function, and assisting him in actual dissections, which helped me to literally "flesh out" the sculpture. The final product of this research was the creation of a smaller musculo-skeletal model 11 inches in length.

The final step was texturing and application of skin. Using a rare fossilized section of Triceratops skin, along with studying reptilian scutellation (scale) patterns with Dr. Gauthier and Taka, I produced an educated guess of what the skin patterns for the Torosaurus might look like. By this painstaking anatomical method of building the muscles over the skeleton, and then adding the thin skin layer, the most accurate sculpture of Torosaurus to date has been created.

Left: "Say AH!" Michael Anderson works on 1/6 scale skeletal model of Torosaurus.

MUSEUM INFORMATION

PERMANENT EXHIBITS

Dinosaurs, Mammals, Primates, Insects, Native American Cultures, Cultures of the Pacific Islands, Meteorites, Minerals, Wildlife Dioramas, Birds of Connecticut, and Ancient Egypt.

TEMPORARY EXHIBITS

The Muskrat & the Osprey: The Hidden Quinnipiac Marsh

SATURDAYS AT THE MUSEUM

The African Roots of the Amistad Rebellion: Mask of the Sacred Bush. (Note: The Amistad is docked in New Haven for most of the summer)

There will be four Saturday full-day events and various other special events scheduled at the Peabody Museum during July and August.

Please visit the museum's website: www.peabody.yale.edu/events or call (203) 432-5099 for detailed information.



William Sacco (2)





BULLARD

ARNOLD J. ALDERMAN MEMORIAL LECTURE HOSTS ENVIRONMENTAL JUSTICE MOVEMENT

On January 20th, 2002, Dr. Robert D. Bullard, Ph.D., Executive Director of the Environmental Justice Resource Center and Ware Professor of Sociology at Clark Atlanta University captivated a standing-room only audience in the Peabody Auditorium. With the academic prowess of a great Yale Professor and the passion of Dr. Martin Luther King, Dr. Bullard inspired and informed us. We are deeply grateful to the children of Arnold J. Alderman. In memory of their father, they generously made this stellar presentation possible.

Dr. Bullard began with some definitions: “We’re all environmentalists, whether we know it or not. If we eat, if we breathe, if we drink water, we are environmentalists.... What is the environment? It is where we live, work, play, go to school. It is everything, the whole of the physical and natural world.”

As he spoke, the intertwined story of the speaker’s life and the history of the Environmental Justice movement unfolded. In 1978, fresh from graduate school in Sociology and three years before the formation of the movement, Dr. Bullard lead the first major scientific study of a case of environmental racism. With 10 of his graduate students he statistically proved that Houston, TX, was sys-

tematically dumping 82% of its garbage on black people. The story and data can be read in one of Dr. Bullard’s 10 books, **Invisible Houston: The Black Experience in Boom and Bust** (Texas A&M University Press, 1987).

He told the audience about the People of Color Summit in Washington D.C. where in 1991, over 1000 delegates agreed upon 17 principals of Environmental Justice. The first one states that the voice of the people involved and affected must be heard in any decision that affects their health and safety. This may seem self evident, yet Dr. Bullard shared numerous examples where even this basic standard is not met.

Another basic tenet of environmental justice: as US citizens, we are all entitled to equal protection from environmental harm. We shudder at the thought of chemical warfare and react with patriotic anger at terrorism. What many of us do not know, however, is that sometimes we do not follow our own environmental laws. Dr. Bullard cited Port Arthur, TX where the residents live in chemical terror all the time, 24 hours a day, 7 days a week. Local administrators cite studies that say there is no real problem. To these he says “Stay in our community for 6 months, drink our water and breath our air, then decide.” Not surprisingly, none have taken that opportunity.

Dr. Bullard is currently working with others to standardize what he calls “Environmental Justice Analysis.” Environmental justice is about “closing the loops” and ensuring that all citizens have equal protection under the law.

In closing, he rang a call to action. A few experts in academia will not turn the tide. Every community should include people who understand these issues, know what is happening in their own locality and be able to speak with authority. If we are to create an environmentally just society, communities must find or develop such internal expertise.

For a more complete bio of Dr. Bullard, detailed information about his books, and lots of valuable and current information about Environmental Justice, visit the Environmental Justice Resource Center website: www.ejrd.cau.edu.



KENNEDY

COMBATING LEAD FROM MANY ANGLES: AN INTERVIEW WITH TED KENNEDY, JR.

“The science behind lead poisoning is so strong that no one can dispute the fact that lead is bad,” said Ted Kennedy, Jr., as he discussed issues of lead poisoning in children in an interview and a joint lecture with Dr. Dottie Needham as part of the *Restoration Agenda: Environmental Justice Lecture Series*. Kennedy emphasized that the problem of lead affects many different parts of life and therefore, in order to solve and prevent future lead poisoning, it is imperative to view this problem from a multidisciplinary angle.

“You can’t disentangle the medical problems from the social problems,” Kennedy noted. “Children have been successfully treated for lead, only to return to the hospital a few months later with more lead-related problems. If children are exposed to lead at home, the source of exposure must be removed in order to protect the children.” As many of the contaminated homes are in poor repair, “lead poisoning is a medical, housing, and social problem,” said Kennedy.

The key to solving the lead problem is recognizing and working with the various factors that cause it, explained Kennedy. To deal with immediate threats presented by housing, the New Haven Lead Safe Home provides a safe place for children with lead poisoning to stay while lead is removed from their homes. “This

is in lieu of hospitalization” added Kennedy, “and a way to keep the family intact.”

As removal of lead from homes is an expensive process, and as predominantly low-income families are exposed to lead, economic hardship is another facet that needs attention, according to Kennedy. In order to deal with this problem, “a federal program through the Department of Housing and Urban Development makes grants available to landlords who will be renting to small children for more than five years,” said Kennedy. This program provides needed economic assistance for lead abatement.

Civil suits can also be used to combat the lead problem. “Approaching the lead problem through litigation or the threat of litigation can be a powerful tool,” said Kennedy. “Although litigation is a powerful tool when successful,” he adds, “the information needed for successful suits can be difficult to obtain.” For example, it is practically impossible to track the origin of thirty-year-old paint. Additionally, children with elevated lead levels often come from families that move frequently. Therefore, it is usually difficult to determine who is legally liable for lead poisoning. Kennedy is hopeful that class action lawsuits may be able to get around these restrictions in the future.

Kennedy emphasized that “one of the largest obstacles with litigation is that liability suits occur after a child shows elevated blood levels; by this point, irreversible harm may have already been done.” For this reason, Kennedy sees preventative approaches from a variety of disciplines as the future course of action.

Expanded screening of children and promotion of lead abatement would prevent lead poisoning, thought Kennedy. “Children are always screened when they come to a clinic. However, children who do not receive medical attention may also be those at high risk for lead poisoning,” said Kennedy. Therefore, medical intervention should be expanded in recognition of social factors.

“Abatement,” noted Kennedy, “can be both more cost effective and beneficial for children’s health rather than treatment after a poi-

soning has occurred; but it can also serve as a mechanism through which New Haven residents can benefit by receiving special training for new jobs as lead abatement specialists.”

“In the past year, New Haven’s rates of lead poisoning have decreased,” stated Kennedy. He suggested that the success New Haven has seen in working with an interdisciplinary model could well be applied to similar problems relating to the environment and health. “Air pollution and asthma problems might be well approached in this fashion,” he said.

Meanwhile, Kennedy and others continue their interdisciplinary-based efforts to help prevent lead poisoning and protect children’s health.

Article submitted by Ellen Wells, '04, who has helped start an environmental health student interest group.

THE RESTORATION AGENDA LECTURE SERIES: ENVIRONMENTAL JUSTICE

The seventh annual *Restoration Agenda Lecture Series* was hosted by the Yale School of Forestry & Environmental Studies (F&ES) and sponsored by the Hixon Center for Urban Ecology and Urban Resources Initiative (URI).

Environmental justice, the topic for spring 2002, proposes that people of color, more often than expected, live in unhealthy environments near toxic waste sites and polluting industries. Scholars and activists explored through lectures and discussions a broad range of perspectives, using case studies from various parts of the U.S. and around the world.

The series investigated the social, economic, health, and legal dimensions of environmental justice. The entire series was designed to forge a guide to environmental revitalization and related research required for the foreseeable future.

PROGRAM NOTES

AYA ENVIRONMENTAL INTEREST GROUP FORMED

An Association of Yale Alumni (AYA) Environmental Interest Group has been formed to provide alumni a forum to discuss environmental issues affecting Yale, the city of New Haven, as well as the rest of the world. The group will be led by Fred Krupp '75, executive director of Environmental Defense, and Will Durbin '01, past president of the Yale Student Environmental Coalition.

The aim of the group is to establish a network of alumni interested in environmental issues; increase student-alumni communication and cooperation; and establish an email discussion group and a biannual newsletter.

If you are interested in joining the AYA Environmental Interest Group, send your name, class year and email and regular mail address to Will Durbin, c/o YSEC, P.O. Box 204663, New Haven, CT 06520-4663, or spencer.durbin@aya.yale.edu.

FUNDED PROJECTS

NIARCHOS FOUNDATION AWARDS GRANT TO PEABODY MUSEUM

The Stavros S. Niarchos Foundation has awarded a three-year grant for over half a million dollars to the Yale Peabody Museum of Natural History (PM) in support of efforts to build a collaborative museum initiative with the Natural History Museum of Crete in Greece, to which funds have also been awarded. The Niarchos Foundation funds projects in Greece and internationally, and provides “contributions outside the realm of public support where Foundation funds have the potential to add value in a significant way.”

The collaboration is organized around a series of exchanges, activities, and projects that will give both university museums and their larger communities the advantage of collaborative scientific research and the ability to communicate the results of this research to the widest possible audience through educational programs, training projects, and exhibitions. While scientists at both the Natural History Museum of Crete and the PM have individual international collaborations, (a curator and a curatorial affiliate at the PM are already working with Museum of Crete scientists) this collaborative initiative would give each museum the added advantage of an integrated, all inclusive structure that would not only benefit both museums and the communities they serve, but also act as a model for other institutions with similar scientific and educational goals.

The Niarchos Grant will support improvements to the educational infrastructures of each Museum, and at the PM, it will enable the construction of the “Niarchos Experimental Classroom.” This multi-functional educational space will serve as a hands-on inquiry based center for all of the PM’s public education and teacher training programs and will be essential for meeting the specific educational objectives of the Peabody-Crete collaboration. Given that there is no classroom for public education, programs currently take place in the Museum’s exhibit halls. A permanent educational space would enhance the existing programs, and when Crete’s visiting exhibition is at the Peabody, a hands-on exper-

imental program will be offered for both students and teachers. This space will also serve as a model to aid the staff of the Museum of Crete in the development of its own teaching facilities in 2004 and will provide the space and technology to enable real-time computer-assisted communication between students in Connecticut and Crete.

The grant will also support a broad array of collaborations between representatives of each university. The project’s steering committee (made up of the directors of both museums, scientific staff representatives from both museums, and the project manager) will focus on overseeing the goals of the initiative.

Scientific exchange is at the forefront of the program. Each museum will prepare a special exhibit on the biodiversity of their respective regions to be exchanged for a year. Besides exploring and demonstrating the ecological makeup of the Mediterranean and Long Island Sound, the traveling exhibitions will also focus on publicizing the goals and progress of the collaboration. Peabody and Greek scientists, fifteen from each university, will meet and discuss their interests, hopefully leading to collaborative biodiversity field research, exchange of collections, applied programs for the management and protection of various ecosystems. Staff members from each museum will sit on a joint committee designed to promote the sharing of best policies and practices, potentially leading to program modifications. Museum scientists will also help to facilitate a Yale-Crete summer school, in which students from each university will have the opportunity to attend a two-week summer course on Crete during the second year of the project and at Yale the following summer. These students will have the chance to learn first-hand about the biodiversity of the region, the environmental problems being faced, and the tools necessary to develop environmental solutions. The Peabody portion of the summer school will use both the Museum building and the Museum’s coastal field station in Guilford, CT.

GAYLORD DONNELLY ENVIRONMENTAL





BEHEREGARAY'S AMAZON PROJECT

The Amazon rainforest is the continental region that contains the world's richest biota. Despite its enormous importance as a source of biodiversity, little is known about the evolutionary processes that generate biological diversification in the Amazon. This is particularly true for its fish fauna, the most diverse on the planet and perhaps one of the least studied. Dr. Luciano B. Beheregaray, a newly appointed Gaylord Donnelley Environmental Fellow at the Yale Institute for Biospheric Studies (YIBS), developed a project that will possibly start changing this scenario. The project aims to investigate evolutionary patterns in fishes from the floodplains of the Rio Negro, the largest of the dark water rivers, located in the middle of the Amazon forest. It will compare population genealogies (constructed from DNA sequences) of four co-distributed fish species to evaluate the influence of historical events in shaping evolutionary divergence and to test hypotheses regarding the diversification of rainforest faunas (e.g. refuge and riverine theories).

Dr. Beheregaray recently returned from a six week expedition along the flooded forests of the middle and upper Rio Negro, in the Brazilian Amazon. Together with two local fishermen and one guide, he explored more than 1,200 miles of rivers and streams and collected over 1,300 fishes that will be used for genetic analyses. The expedition was funded by the YIBS Ecosave Center and logistic support was provided by Project Piaba (University of Amazonas, Brazil). As part of his research activities at Yale, Dr. Beheregaray is also investigating the phylogeography and history of colonization of giant tortoises from the Galápagos Islands. He received his PhD at Macquarie University (Sydney), working on historical biogeography and speciation of silverside fishes from temperate South America.

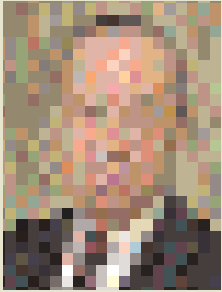


Top: Dr. Beheregaray with members of the expedition with the gear for fishing in the flooded forest

Bottom: The Rio Negro holds the largest fluvial archipelago on the planet

© Araquém Alcántara

FACULTY NEWS



GRAEDEL



OLIVER

F&ES PROFESSOR GRAEDEL ELECTED TO NATIONAL ACADEMY OF ENGINEERING

Thomas Graedel, Clifton R. Musser Professor of Industrial Ecology and professor of chemical engineering and geophysics at the Yale School of Forestry & Environmental Studies (F&ES), has been elected to the prestigious National Academy of Engineering for “outstanding contributions to the engineering theory and practice of industrial ecology, particularly for improved methods of life-cycle analysis.”

In addition, A. Stephen Morse, professor of electrical engineering at Yale, was elected to the academy for “contributions to geometric control theory, adaptive control, and the stability of hybrid systems.”

Both professors will be inducted into the National Academy of Engineering at its annual meeting on October 6th. Election to the academy is one of the highest professional distinc-

tions that can be accorded an engineer. Academy membership honors those who have made important contributions to engineering theory and practice and who have demonstrated unusual accomplishment in the pioneering of new and developing fields of technology.

“Professor Graedel is a prolific researcher and writer, and has been centrally involved in the establishment of F&ES as one of the world’s foremost centers for industrial ecology,” F&ES Dean James Gustave Speth said.

Professor Graedel was a member of the technical staff at AT&T Bell Laboratories for 27 years before joining the Yale faculty in 1997 as the country’s first Professor of Industrial Ecology at F&ES. Trained in chemical engineering, physics and astronomy, he has made major contributions to the fields of atmospheric composition and global change, atmospheric chemistry, and the effects of the atmosphere on materials, and is considered a pio-

TOP PRACTITIONERS TO JOIN FACULTY AT F&ES

Environmental leaders from Brazil, Pakistan and Singapore, as well as the immediate past director of the U.S. National Parks Service, will join the visiting faculty of the Yale School of Forestry & Environmental Studies (F&ES).

“Having visiting faculty is a long-standing tradition at the school,” said Dean James Gustave Speth. “These additions are part of a special effort to bring in leaders from abroad to complement our academic faculty with top practitioners.”

Robert Stanton was the 15th director of the National Park Service, and the first African American to hold that position since the establishment of the agency by Congress in 1916. He was responsible for managing the \$2.3 billion annual budget of the 83-million-acre National Park System, which attracts 288 million visitors each year. Additionally, he was responsible for 20 trails in the National Trail System and oversaw major national education and preservation programs, including the

Youth Conservation and Public Land Corps, National Register of Historic Places, the Underground Railroad Network to Freedom, and the Service’s international affairs. Nominated by President Clinton and confirmed by the U.S. Senate in 1997, he served as director for three and a half years. Currently he is a private consultant in conservation policy, planning and management, and serves as congress ambassador to the International Planning Committee of the World Conservation Union’s (IUCN) World Commission on Protected Areas in support of the Fifth World Congress on National Parks next year in Durban, South Africa. He will join the F&ES faculty next fall.

Aban Marker Kabraji, the IUCN’s regional director for Asia since 1999, will join the faculty in spring 2003. A Pakistani, she serves on the governing board of the International Institute for Sustainable Development. From 1989 to 1999, she was Pakistan’s representative to the IUCN and worked with the Pakistani government to establish a Nature Conservation Strategy within the Environment Ministry. Prior to that, she was regional direc-

tor of the World Wildlife Fund and conducted extensive research into the conservation of marine turtles. She is also one of the founders and a trustee of Shikat Gah, the first women’s NGO in Pakistan, and is a member of the Pakistan Women’s Action Forum.

John Michael Forgach, a Brazilian who launched the first for-profit biodiversity investment fund in Latin America, will arrive in fall 2003. A former international banker with Chase Manhattan Bank and others, he holds a number of environmental awards for his innovative approach to environmental banking, including the 2001 Rainforest Alliance Green Globe Award and the 2000 BRAVO Business Award as Latin American environmentalist of the year. He is also the founder of the Brazilian Institute for Education in Sustainable Business, which is a non-governmental organization dedicated to management capacity building in Latin America. He also helped establish Swiss and Brazilian NGOs for the preservation of endangered South American wildlife.

neer in the nascent academic discipline known as industrial ecology. He is the author or co-author of 11 books and more than 250 technical papers in scientific journals. In industrial ecology, he has helped establish the foundations of the field through articles in professional journals and publication of four books—*Industrial Ecology*, first published in 1995 and soon to be released in an expanded second edition; and three related books—*Design for the Environment*, *Industrial Ecology and the Automobile*, and *Streamline Life-Cycle Assessment*.

In the field of atmospheric chemistry, his major contributions have included, in addition to many peer-reviewed journal articles, *Atmospheric Corrosion* with Christofer Leygraf, and two books co-authored with Nobel Laureate Paul Crutzen, *Atmospheric Change: An Earth System Perspective*, and *Atmosphere*,

Lye Lin Heng, an associate professor of law at the National University of Singapore (NUS) since 1975, will arrive in spring 2004. She is leading the development of a masters-level environmental management program and is the deputy director of the Asia-Pacific Center for Environmental Law at NUS. She has served as vice dean and director of graduate programs, a member of the International Union for the Conservation of Nature and Natural Resources Commission on Environmental Law, was chair and editor of the *Malaya Law Review* (now the *Singapore Journal of Legal Studies*), and has published several papers and publications on environmental law in Singapore.

Dean Speth and Dean Cheong Hin Fatt of the National University of Singapore's School of Design and Environment signed a memorandum of understanding last July to establish an international partnership that will encourage closer cooperation between the two institutions in teaching and research in the field of environmental management.

Climate and Change, which won the American Meteorological Society's Louis J. Battan Author's Award in 1995.

Professor Graedel has served on important national committees and was chair of the National Research Council Committee on Grand Challenges in Environmental Sciences. The committee, established at the request of the U.S. National Science Foundation, was charged with defining and prioritizing environmental research areas for NSF for the next two decades. Other committee memberships include service as co-chair of the National Academy of Engineering's Workshop on Material Flows Accounting of Natural Resources, Products and Wastes in the United States, and membership in the National Research Council Commission of Geosciences, Environment and Resources, one of five commissions that oversees operations of the scholarly activities of the National Research Council. Professor Graedel was recently appointed by the Yale administration to chair the university's Advisory Committee on Environmental Management, essentially a first step toward "greening" Yale.

Additionally, Professor Graedel has developed new courses, attracted the university's first doctoral students in this area, assisted in bringing the editorship of the critically acclaimed *Journal of Industrial Ecology* to F&ES, and serves as faculty director of the Center for Industrial Ecology, which was established with a \$1 million endowment gift in 1998.

A graduate of Washington State University, he holds an M.A. in physics from Kent State University and an M.S. and Ph.D. in astronomy from the University of Michigan. He is a fellow of Pierson College.

CHAD OLIVER NAMED TO PINCHOT CHAIR

Chad Oliver, a renowned expert in the field of forest stand dynamics and landscape management, has been appointed the Pinchot Professor of Forestry and Environmental Studies.

"Chad is widely respected internationally as a silviculturist with a deep understanding of both the dynamics of forest processes and the interactions of human societies and forests," said Dean Speth.

Professor Oliver joined the F&ES faculty in January and also serves as director of Yale's Global Institute of Sustainable Forestry. A leading voice for sustainable forestry worldwide, he has broken new ground with the development of computer models that provide important tools for land management in forests. His Land Management System (LMS), a computer program which provides forest growth and yields models and analytical and visualization capabilities, has been used widely in forest management.

Professor Oliver's book, *Forest Stand Dynamics* (McGraw-Hill 1990; second edition, John Wiley, 1996), is considered to be one of the most important contributions to silviculture in the last 50 years. He has more than 70 reviewed publications including journal articles, book chapters, and symposia proceedings. He also has a long record of providing testimony to congressional committees, scientific and policy advisory panels, and state boards.

Graeme Berlyn, E. H. Harriman Professor of Forest Management, said of Professor Oliver: "I can think of no one who can command the same authority in matters of the world's forests as Chad Oliver. He brings not only technical expertise with his computer programs, models, and analyses, but an unparalleled depth of knowledge of forests."

Professor Oliver holds a master of forest science from the School of Forestry & Environmental Studies and a Ph.D. from the Yale Graduate School of Arts and Sciences Department of Forestry and Environmental Studies. After obtaining his doctorate in 1975, he briefly held an instructorship at Harvard. That same year, he joined the faculty at the University of Washington, rising to the rank of full professor in 1986. His academic and professional experience extends to all the major forested regions of North America, as well as Europe, Asia, and Central and South America.

continued on page 14



From left to right:
Dr. John Wetlaufer,
Dr. Mark Pagani,
Dr. David Evans

THREE NEW FACULTY JOIN THE DEPARTMENT OF GEOLOGY & GEOPHYSICS

Dr. John Wetlaufer

Dr. John Wetlaufer joined Yale last January as a joint professor of geophysics and physics. He previously was with the University of Washington, Seattle, where he received his Ph.D. in 1991, and where he will remain an affiliate professor of physics. During his tenure at the University of Washington he spent sabbatical leaves at Cambridge University's Institute of Theoretical Geophysics, which straddles the Departments of Applied Mathematics and Theoretical Physics, and Earth Sciences, the Norwegian Polar Research Institute in Oslo, and was the 1999 Japan Society for Promotion of Science Visiting Professor at the Institute of Low Temperature Science at Hokkaido University in Sapporo. In 1997 Dr. Wetlaufer was the Director of a NATO-Advanced Study Institute: "Ice Physics in the Natural and Endangered Environment", held in Maratea Italy and he serves on the Technical Advisory Panel of an environmental geotechnical company RKK Limited, in Redmond, Washington. He has been a member of both the American Geophysical Union's Technical Committees on Nonlinear Geophysics and Snow, Ice and Permafrost. During his research career he has spent a total of over a year on drifting sea ice in the Arctic Ocean.

Even for the interdisciplinary milieu of environmental science and geophysics, Dr. Wetlaufer's interests and background are

broad. When asked to describe his approach he says that it is "most easily described as a hybrid between condensed matter theory and experiment, materials physics, and applied mathematics with applications focusing on environmental, geophysical and technological problems." The scales of Dr. Wetlaufer's research projects range from atomic to kilometers, with implications on global scales. He and his collaborators and students have shown how microscopic films of unfrozen water that exist at ice surfaces to temperatures well below 0° C play a central role in phenomena as diverse as ozone destroying chemistry in polar stratospheric clouds, frost heave in soils, thunderstorm electrification and the redistribution of paleoclimate signals in earth's great ice sheets.¹ The underlying mechanism responsible for the existence of such "quasi-liquid" films emerges out of a fundamental understanding of surface phase transitions, the typical domain of the condensed matter physicist, but their environmental and geophysical consequences are great, and Dr. Wetlaufer looks forward to pursuing these problems with members of the Yale community. An emerging area of research concerns the possibility of life in extreme environments, such as on the icy moon of Jupiter, Europa. A recent hypothesis put forth by Dr. Wetlaufer posits that biota can exist in an icy body by creating a quasi-liquid environment disjoining themselves from the ice lattice, thereby allowing the persistence of an aqueous habitat at subfreezing temperatures. He will test these ideas in the laboratory with microbiologist and newly appointed YIBS Gaylord Donnelly Fellow Klaus Meiners.

¹ A popular account of these phenomena appears in the February 2000 issue of *Scientific American*

The relatively comfortable climate that earth's inhabitants experience is a fortunate consequence of the present extent of the global ice cover, and changes in its dynamics capture scientific and public interest principally because of their role in global warming and ice-age events. Dr. Wetlaufer studies the dynamics and thermodynamics of the sea ice that forms in the polar oceans, and which plays the high latitude equivalent role of the evaporation and precipitation cycle. The melting and freezing of sea ice drives large scale thermohaline circulation creates the bottom water of the world's oceans. For this reason, in the Department of Geology and Geophysics, where Dr. Wetlaufer's fluid dynamics and ice physics laboratories are being renovated and outfitted, he has research and teaching interests that overlap with faculty working in geophysical fluid dynamics, the physics of the earth's interior and paleoclimate geochemistry. Because of his research in the statistical mechanics of crystal growth and surface phase transitions, Dr. Wetlaufer is associated with the condensed matter theory group in the Department of Physics. To the uninitiated, these might seem like the affiliations of a dilettante, but to Dr. Wetlaufer, they are an unavoidable consequence of taking a fundamental approach to understanding the processes that influence both semiconductors and the earth's climate. Dr. Wetlaufer hopes that such research topics will help forge links between geophysics, geochemistry, engineering, astronomy, mathematics and physics that don't presently exist in a traditional departmental structure but that Yale is embracing with his arrival.

Dr. Wetlaufer looks forward to teaching courses in geophysical fluid dynamics, and mathematical methods in geophysics at the graduate level and dynamical climatology at the undergraduate level. Having grown up in Colorado before moving to Seattle, he is an avid skier, climber, and mountain biker and understands that he will have to put his understanding of ice to good use in the mountains of the east.

Dr. Mark Pagani

Dr. Mark Pagani joins Yale University as an Assistant Professor in the Department of Geology & Geophysics this July. As a geochemist, he researches the causes and effects of long- and short-term climate change. He received his Ph.D. at the Pennsylvania State University in 1998 and spent two years as a postdoctoral researcher at the University of California, Santa Cruz. He comes to Yale University from Colorado State University where he works as a Research Associate in the Natural Resource Ecology Laboratory.

Dr. Pagani's work spans paleoclimatology, paleoceanography, and organic geochemistry. He uses chemical records of organic molecules and carbonates to study ancient oceans, terrestrial systems, and the evolution of Earth's atmosphere. He will work closely with the new YIBS Center for Light Stable Isotope Mass Spectrometry in Environmental Studies, which houses his primary instrument designed to measure stable isotopic compositions of compound specific organic molecules (biomarkers). The distribution and isotopic composition of biomarkers yield information on carbon dioxide concentrations, temperature, rainfall, and food web structure. His most notable effort to date provides evidence that carbon dioxide levels for the past 25 million years were lower than modern concentrations, suggesting that CO₂ was not the primary agent responsible for long-term climate change during this time. His current research projects include the study of the Cenozoic history of atmospheric carbon dioxide and the evolution of C₄ photosynthesis, and the influence of anthropogenic nitrogen in high-altitude environments of the Rocky Mountains.

Dr. David Evans

Dr. David Evans joined the faculty in January 2002 as Assistant Professor in the Department of Geology & Geophysics.

Dr. Evans is a top young scientist in the area of paleomagnetism and the reconstruction of ancient continents and supercontinents. While completing his PhD in 1998 at the California Institute of Technology, and postdoctoral study at the University of Western Australia, he has made widely recognized contributions to

understanding the early history of the Earth (Precambrian, >550 million years ago), as evidenced by the motion and configuration of the continents and the record of extreme climate conditions.

Evans's research has also given renewed support to the idea that the entire crust and mantle of the earth (i.e. from the surface to 2900km depth) is able to shift rapidly en masse relative to the Earth's spin axis. Through compilation of his own and others' paleomagnetic data, he has demonstrated that events of very rapid continental motions are best explained by such "true polar wander." In the future, Evans seeks to decipher the interfering paleomagnetic signals of true polar wander and plate tectonics, and eventually map the history of supercontinental amalgamation and dispersal over the last three billion years. These results will provide direct insights into long-term global geodynamics.

In addition to continental reconstructions, Dr. Evans's research foci include the global distributions of ancient glacial deposits, which in Precambrian time were concentrated paradoxically near the equator. Such observations form the basis for the "Snowball Earth" theory of globally gripping ice ages lasting tens of millions of years, occurring as many as five times in the Precambrian era, when multicellular life had not yet evolved. Other research areas include quantifying the large-scale kinematics of mountain belts and unraveling the genesis of metal ore deposits.

Evans's work entails fieldwork (on six continents thus far), paleomagnetic analyses, and regional/global tectonic syntheses. These studies provide the framework for all aspects of the long-term Earth system, including the development of early life and its environment.



DR. DAVID POST JOINS FACULTY IN EEB

Dr. David Post will join the faculty of Yale in July of 2002 as an assistant professor in the

Department of Ecology & Evolutionary Biology. Dr. Post works primarily in aquatic ecosystems, where he uses empirical and theoretical methods to answer questions at the interface of population, community, and ecosystem ecology. Before joining the Yale faculty, Dr. Post was a postdoctoral fellow at the National Center for Ecological Synthesis and Analysis at the University of California, Santa Barbara. Dr. Post earned his Ph.D. in 2000 from Cornell University, and his M.S. in 1996 from the University of Wisconsin-Madison.

Dr. Post has most recently worked to develop and apply stable isotope techniques to test long-standing theories about the ecological determinants of food-chain length in natural ecosystems. His work has challenged the conventional wisdom that energy or resource availability limits food-chain length and has highlighted the important role of

ecosystem size in determining food web structure. For this research, Dr. Post received the 2002 Lindeman Award from American Society of Limnology and Oceanography for an outstanding paper written by a young (under 35) aquatic scientist. Other major research interests include investigating the interplay between structure and dynamics in food webs, testing the influence of population dynamics on community structure and ecosystem processes at multiple spatial and temporal scales, and evaluating the role of mobile consumers as landscape linkages. Dr. Post has also collaborated to document trophic polymorphism in sympatric pupfish and to explore the rapid evolution of grazer performance in zooplankton during cultural eutrophication.

Dr. Post's lab is located in the new Environmental Sciences Center. He hopes to build an intellectually diverse research group focused on understanding complex food-web interactions, landscape linkages, and feedbacks among populations, communities, and ecosystems in and around aquatic ecosystems. Dr. Post is also a member of the YIBS' Centers for Field Ecology and Stable Isotopic Studies of the Environment. He will teach courses in general ecology and field ecology.



YALE DEAN RECEIVES BLUE PLANET PRIZE

The Dean of the Yale School of Forestry & Environmental Studies has been awarded the international environmental Blue Planet Prize by the Tokyo-based Asahi Glass Foundation. The prestigious prize has been awarded annually since 1992 to two individuals or organizations that have made major contributions to global environmental conservation.

Yale Dean James Gustave Speth was awarded the prize for “a lifetime of creative and visionary leadership in the search for science-based solutions to global environmental problems and for pioneering efforts to bring these issues, including global climate change, to broad international attention.”

The other recipient of this year’s prize is Dr. Harold Mooney, the Paul S. Achilles Professor of Environmental Biology at Stanford University. Dean Speth and Professor Mooney will be honored in a ceremony in Japan in November and each will receive an award of 50 million yen.

The prize citation observes that Dean Speth “has devoted his career to creating and invigorating environmental institutions of

extraordinary importance.” It also notes that he played a leadership role in creating the Natural Resources Defense Council in 1970 and that he was among the first to call for international action on global climate change.

“In 1980,” it continues, “he helped to predict the current challenge to the global environment in the Global 2000 Report, as chairman of the Council on Environmental Quality in the Carter Administration. He then founded the World Resources Institute and led it in the search for science-based solutions to large-scale environmental threats. He went on to serve as administrator of the United Nations Development Programme and focused the agency on sustainable, people-centered development. As Dean, he now seeks to help the Yale School of Forestry & Environmental Studies become the first global school of the environment.”

Yale President Richard C. Levin said, “Gus Speth’s unwavering commitment to issues affecting the global environment makes him truly deserving of this prestigious honor. We are proud of his achievement and we are also proud to have him at the helm of the Yale School of Forestry & Environmental Studies.”

Previous winners of the prize include: Norman Myers, an honorary visiting fellow at Oxford University; Lord Robert May, president of the Royal Society of London; Paul Ehrlich, director of the Center of Conservation Biology at Stanford; the late David Brower, who was chairman of the Earth Island Institute; Wallace Broecker, Newberry Professor of Geology at the Lamont-Doherty Earth Observatory of Columbia University; Maurice Strong, chairman of the Earth Council; Bert Bolin, chairman of the Intergovernmental Panel on Climate Change; and Lester Brown, founder and president of the Worldwatch Institute.

F&ES ADDS FOUR FACULTY MEMBERS

As part of its ongoing faculty development plan, the Yale School of Forestry & Environmental Studies (F&ES)—Yale’s Environment School—is adding four faculty members to the ladder ranks.

The addition of the new assistant professors is designed to add depth to the school’s programs in environmental and energy economics, industrial environmental management and ecosystem ecology. They bring to 14 the number of faculty recruited to F&ES in the past two years.

The new faculty members include Marian Chertow, director of the Industrial Environmental Management Program at F&ES, assistant professor of industrial environmental management; Sheila Cavanagh, assistant professor of environmental and natural resource economics; Erin Mansur, jointly appointed with the Yale School of Management as an assistant professor of energy and environmental economics; and Peter Raymond, assistant professor of ecosystem ecology.

“We are very pleased that these extremely promising scholars will be joining our expanding program,” says Dean James Gustave Speth. “They are committed to outstanding scholarship, but also have the commitment to practical environmental management that we seek.”

Marian Chertow, who recently completed her Ph.D. at F&ES, has directed the school’s Industrial Environmental Management Program since 1991. Her teaching and research focus on industrial ecology, environmental technology innovation and business/environment issues. Her current research interests are the application of innovation theory to the development of environmental and energy technology, and the study of industrial symbiosis, involving geographically-based exchanges of wastes, materials, energy and water within networks of businesses. She co-edited the 1997 book, *Thinking Ecologically: The Next Generation of Environmental Policy*, with Daniel Esty, professor of environmental law and policy at F&ES. The book, published by Yale University Press, is in its second printing.

Chertow joined Yale after 10 years in state and local government and environmental busi-

ness. During the 1980s she served as president of the Connecticut Resources Recovery Authority, a statewide bonding agency where she oversaw the development and construction of environmental infrastructure projects.

Sheila Cavanagh, a doctoral candidate in public policy at Harvard's Kennedy School of Government, received a master's degree in public affairs from the University of Texas at Austin and a bachelor's degree with high distinction in political and social thought from the University of Virginia. Her dissertation research focuses on the effectiveness of various policy instruments in managing urban water scarcity. She has worked in research capacities at the Texas Water Development Board, Texas Natural Resource Conservation Commission, the University of Texas' Center for Environmental Resource Management in Latin America and the National Policy Association in Washington, D.C.

Erin Mansur is a doctoral candidate in the Department of Economics at the University of California, Berkeley. He has conducted research in various applied fields while working at the University of California Energy Institute, Goldman School of Public Policy and Resources for the Future. His job market paper, "Environmental Regulation in Oligopoly Markets: A Study of Electricity Restructuring," examines the environmental welfare implications of firms exercising market power in the recently deregulated Pennsylvania, New Jersey and Maryland electricity market. His other research has focused on the magnitude of wealth transfers resulting from the exercise of market power, and the response of San Diego customers to retail electricity price shocks.

Peter Raymond is a postdoctoral scientist at the Woods Hole Oceanographic Institute, Department of Applied Ocean Physics and Engineering. He holds a Ph.D. in physical oceanography from the College of William & Mary and a bachelor's degree in environmental chemistry from Marist College. His research interests include inorganic carbon cycling and air-sea exchange; isotope geochemistry of riverine, estuarine and oceanic organic matter; and organic carbon cycling in marshes, rivers, estuaries and oceans.

STUDENT NEWS

UNDERGRADUATE ENVIRONMENTAL SUMMER INTERNSHIPS 2002

The Environmental Studies Program and the Department of Ecology & Evolutionary Biology (EEB) recently awarded 27 Undergraduate Environmental Summer Internships totaling \$63,045 to Yale undergraduates. The William Bingham and Montgomery Family Endowments that support Environmental Studies provided the funding for the internships along with the Department of Ecology & Evolutionary Biology.

The following students received support for their summer projects:

Laura Bozzi '03, Ecology & Evolutionary Biology *An Investigation of Phragmites Populations on the Coastal Wetlands of Narragansett Bay, Rhode Island.*

Geoffrey Chaiken '04, Economics *Study of the Luminous Life and Fluorescent Proteins in Cnidaria of Australia's Great Barrier Reef*

Noah Chesnin '04, Humanities *Internship with Environmental and Energy Study Institute in Washington DC*

Kyla Dahlin '03, Ecology & Evolutionary Biology *Investigation of Weather Patterns and Rate of Tree Growth in Hubbard Brook Experimental Forest*

Melissa Garren '03, Molecular, Cellular & Developmental Biology *Is Coral Bleaching Adaptive? Smithsonian Tropical Research Institute in Panama*

Philip Gerhardt '04, Environmental Engineering *Strategies for Sustaining Tropical Ecosystems and Organic Farming Methods in Costa Rica, School for Field Studies*

Lauren Gold '03, Molecular, Cellular & Developmental Biology *Researching Health-Related Environmental Policy with the Bureau of Oceans and International Environmental and Scientific Affairs, State Department, Washington DC*

Scott Goldberg '03, Economics and Studies in the Environment *Tropical Ecology in Costa Rica, Organization for Tropical Studies*

Emily Hurstak '03, Ecology & Evolutionary Biology *Research and Development of Policy on the Preservation of Ecosystems and Endangered Species with the United States Department of State, Bureau Oceans and International Environmental and Scientific Affairs, Washington DC*

Judith Joffe-Block '04, History or Ethics, Politics & Economics *Finca Loma Linda Agroecology Internship: Coto Brus, Costa Rica*

Andrea Kanner '04, Ecology & Evolutionary Biology and Anthropology *Internship with the Sierra Club on Reducing Suburban Sprawl through Improved Public Transportation around Washington D. C.*

Hanan Karam '03, Environmental Engineering *Tradeoff Analyses of Different Combinations of Mixed Crop and Livestock Systems with the International Potato Center at La Molina in Peru*

Madeleine Meek '04, Environmental Studies *An Introduction to Sustainable Development Projects In and Surrounding Ranomafana National Park, Madagascar*

William Parish '04, Ethics, Politics & Economics *Sustainable Development Internship in India or Bhutan*

Benjamin Smith '03, Ecology & Evolutionary Biology *Analyzing the Viburnum dentatum Complex for Ecological, Morphological, and Molecular Patterns*

Adam Schempp '03, Ethics, Politics & Economics *A Case Study of the Lower Colorado River: Evaluating the Effectiveness and Rationality behind Major Streamflow Diversion as a Possible Solution to Water Shortages*

Linda Shi '04, Environmental Studies *Summer Internship with the Center for Biodiversity and Indigenous Knowledge in Kunming, China*

Abhimanyu Sud '03, Molecular, Cellular & Developmental Biology *Urban Agriculture in Bangalore, India with the NGOs Agriculture, Man, and Ecology, the Karnataka Compost Development Corporation, and the women's dairy co-operative, Sampark*

continued on page 18



STUDENT NEWS (continued from page 17)

Dow Tang '05, Environmental Engineering *Internship in Hawaiian Volcanoes National Park Monitoring Sea Turtles and Controlling Invasive Exotic Species*

Elizabeth Waldman '03, History *Internship in Kununurra Branch of the Governmental Organization Conservation and Land Management (CALM) in Western Australia*

Patricia Zambrano '05, Economics and Environmental Studies *Internship with POEMA in their Program to Spur Sustainable Development and Reverse Environmental Degradation in Amazonia*

In addition the following students received support to attend the course Tropical Field Ecology of Mexico offer by Yale University and taught by Dr. Theodora Pinou in the department of Ecology and Evolutionary Biology.

Margaret Aiken '04, American Studies *Fluctuation in the Population Density of Hemidactylus frenatus in Careyes, Mexico*

Lance Ching '03 Ecology & Evolutionary Biology *Population Density Dynamics and Foraging/Basking Behavior of Bataguridae Turtles in Careyes, Mexico*

Taylor Larson '04, Ethics, Politics and Economics *American Crocodile Conservation*

Michelle Lee '04, Ecology & Evolutionary Biology *Recolonization of Bird Populations in a Tropical Shrub Forest*

Andrew Hamilton '05, Undeclared major *Investigation of the Epiphytic Relationships of Orchid Species Growing in Costa Careyes, Mexico*

Damon Nakamura '04, Ethics, Politics and Economics *Nesting Behavior and Conservation of Green Sea Turtles*

FIVE F&ES STUDENTS NAMED HEINZ SCHOLARS

Five students from the Yale School of Forestry & Environmental Studies will receive grants to study the world's most pressing environmental challenges as Teresa Heinz Scholars for Environmental Research.

The F&ES scholars include two Ph.D. candidates, who will receive \$10,000 grants, and three masters' candidates, who will receive \$5,000 awards to pursue critical environmental research. Seventeen students in all were named Heinz Scholars from some of America's most prestigious universities, including Carnegie Mellon, Cornell, Florida A&M, Harvard, Stanford, and Texas A&M at Corpus Christi, were selected by a review committee of distinguished scientists and environmentalists.

The F&ES students and their areas of research are: Ph.D. candidate Pamela McElwee, "*Lost Worlds and Local People: The Effects of Migration, Land Tenure, and Ethnicity on Natural Resources Use around Protected Areas*"; and Steve Rhee, "*Intent and Consequence: Examining Forestry Institutions and Community Management in Indonesia*"; and master's candidates: Elizabeth Gordon, "*The Bushmeat Crisis and the Great Apes: Working toward a More Integrated Decision-Making Process*"; Christopher Menone, "*Urban Environmental Sustainability Metrics: Developing Goals for Green Cities*"; and Elizabeth Shapiro, "*Interdisciplinary Agroecological Research as a Tool for Conservation Planning*."

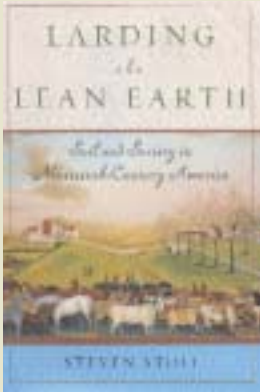
Selection was based on project proposals that covered a wide range of environmental concerns, including low-level radioactive waste, exploring the connection between land use and human health, measuring the effects of long-term habitat conversion on native plant diversity and identifying factors for the success of marine protected areas.

The Teresa Heinz Scholars for Environmental Research program, now in its fifth year, is a project of the Teresa and H. John Heinz III Foundation that provides support for doctoral dissertations and student research projects that explore emerging environmental problems and their solutions. The program was created to encourage students to integrate environmental thinking across a wide range of disciplines.

ENVIRONMENTAL ENGINEERING STUDENT RECEIVES ENVIRONMENTAL CHEMISTRY AWARD

Environmental Engineering graduate student, **Sharon Walker**, working under the supervision of Professor Menachem Elimelech, was selected as a winner of one of the American Chemical Society's 2002 *Environmental Chemistry Graduate Student Awards*. The awards are given annually by the American Chemical Society, Division of Environmental Chemistry to graduate students upon the merit of their course work, research productivity, and potential for making substantial contributions to the field of Environmental Chemistry and Engineering. Sharon will receive a one-year membership to the American Chemical Society and a one-year subscription to *Environmental Science & Technology*, the leading journal in Environmental Engineering Science. *Environmental Science & Technology* online news article about the award: http://pubs.acs.org/subscribe/journals/esthag-w/2002/feb/business/rp_winners.html

PUBLICATIONS



STOLL BOOK OFFERS HISTORY OF EARLY AMERICAN'S IDEAS ABOUT CONSERVATION

Larding the Lean Earth, the new publication written by Steven Stoll, Assistant Professor of History at Yale University and Director of Undergraduate Studies for the Environmental Studies Program. This book represents a major history of Early American's ideas about conservation—fifty years after the American Revolution, the yeoman farmers who made up a large part of the new country's voters faced a crisis. The very soil of American farms seemed to be failing and agricultural prosperity, upon which the Republic was founded, was threatened. Steven Stoll's passionate and brilliantly argued book explores the tempestuous debates that erupted between “improvers” who believed in practices that sustained and bettered the soil of existing farms, and “emigrants” who thought it was wiser and more “American” to move westward as the soil gave out. Stoll examines the dozens of journals, from New York to Virginia, that gave voice to the improvers' cause. He also focuses especially on two groups of farmers, in Pennsylvania and South Carolina. He analyzes the similarities and differences in their farming habits in order to illustrate larger regional concerns about the “new husbandry” in free and slave states.

Farming has always been the human activity that most disrupts nature, for good or ill. The decisions these early Americans made about how to farm not only expressed their political and social faith, but also influenced American attitudes about the environment for

decades to come. *Larding the Lean Earth* is a signal work of environmental history and an original contribution to the study of antebellum America.

Daniel Feller from the University of New Mexico comments, “Steven Stoll's brilliantly original *Larding the Lean Earth* unearths hidden layers of meaning behind American antebellum farm practices and the westward movement. This thoughtful and far-reaching work traces the origins of today's ecological crisis to the failure of the antebellum ethic of ‘improving the soil.’ Evocative and provocative, written with verve and passion and with new insights on every page, this is a book that every nineteenth-century historian will want to read.”



NEW BOOK INVESTIGATES RELATIONSHIP BETWEEN CHILDREN, NATURE

A scientific investigation of the relationship between children and nature is the focus of a new book co-edited by professors at the Yale School of Forestry & Environmental Studies and the University of Washington.

The book, *Children and Nature: Psychological, Sociocultural, and Evolutionary Investigations*, published by MIT Press, examines the evolutionary significance of nature during childhood; the formation of children's conceptions, values, and sympathies toward the natural world; how contact with nature affects children's physical and mental development; and the educational and political consequences of the weakened childhood experience of nature in modern society.

“For much of human evolution, the natural world was one of the most important contexts of children's maturation,” says Stephen Kellert, Tweedy/Ordway Professor of Social Ecology at Yale. “Yet scientific knowledge of the significance of nature during the different stages of childhood is sparse.”

Children and Nature incorporates research from cognitive science, developmental psychology, ecology, education, environmental studies, evolutionary psychology, political science, primatology, psychiatry, and social psychology.

Kellert is the author of the recently published, *The Good in Nature and Humanity: Connecting Science, Religion and Spirituality with the Natural World*. His work has focused on the connection between human and natural systems with a particular concern for the conservation of biological diversity and designing ways to harmonize the natural and human-built environment.

He has authored more than 100 publications, including several books that explore people's relationship to nature. In 1993, he co-edited *The Biophilia Hypothesis* with Edward O. Wilson, an entomologist at Harvard. The book brought together 20 scientists from various disciplines to refine and examine the idea of biophilia, which suggests that humans possess a deep and biologically based urge to connect with the natural world.

He went on to publish *The Value of Life: Biological Diversity and Human Society* (1996), and *Kinship to Mastery: Biophilia in Human Evolution and Development* (1997). He is working on another book, *Ordinary Nature: The Role and Design of Natural Diversity in Everyday Life*, to be published by the University of California Press.

The other co-editor of *Children and Nature*, Peter Kahn, Jr., is an associate professor of psychology and research affiliate with the Center for Mind, Brain and Learning at the University of Washington and co-director of the Mina Institute in Covelo, Calif. He is the author of *The Human Relationship with Nature* (1999).

F&ES ALUMNI WEEKEND



Dana Keeton (4)

Peter Otis

F&ES HOLDS FIRST-EVER ALUMNI/AE WEEKEND

A tour of Yale-Myers Forest, a seminar on sustainable forestry, a professional roundtable and dinner at Mory's were the highlights of the first-ever alumni/ae weekend for the Yale School of Forestry & Environmental Studies.

The alumni/ae weekend, which was held over three days in May, featured a discussion on "Sustainable Forestry: What is It? How Do We Achieve It?" Over 70 people gathered in Marsh Hall to hear presentations by Chad Oliver M.F.S. '70, Ph.D. '75, Director of Yale's Global Institute for Sustainable Forestry; Jeffery Burley M.F. '62, Ph.D. '65, director of the Oxford Forestry Institute; and Wangari Maathai, the Dorothy McCluskey Visiting

Fellow for Conservation. The presentations were the inaugural event in the Global Institute's "Achieving Sustainable Forestry" seminar series that will continue next fall.

Also, a guided tour of Yale-Myers Forest was conducted by Mark Ashton '85 M.F., '90 Ph.D., Director of School Forests, and David Smith '46 M.F., '50 Ph.D., Morris K. Jesup Professor Emeritus of Silviculture; and a tour of New Haven Water Company lands was led by Tim Hawley M.F. '77, Natural Resources Manager for the New Haven Regional Water Authority.

The weekend concluded with a professional roundtable that explored the array of professions served by F&ES, a meeting of the Alumni/ae Association, and dinner at Mory's.

For more information about the F&ES Alumni/ae Association, call Kath Schomaker, Director of Alumni/ae Affairs, 432-5108.

From left to right: Don McCluskey with Wangari Maathai, the Dorothy McCluskey Visiting Fellow for Conservation. Maathai talked about the Green Belt Movement, which she founded in 1977 to conserve the environment and improve the quality of life, especially for women, in Kenya.

Dorothy McCluskey and James Gustave Speth, Dean of the School of Forestry & Environmental Studies.

Jeffery Burley, Director of the Oxford Forestry Institute and a presenter at the seminar, with David Smith, Morris K. Jesup Professor Emeritus of Silviculture.

Chad Oliver, left, Director of the Global Institute for Sustainable Forestry, co-presented on the evening's theme: "Sustainable Forestry: What is It? How Do We Achieve It?"

Ruth Allen M.F.S. '72, Jeff Stewart M.E.S. '97, center, and Adam Moore M.F. '95 at a meeting of the F&ES Alumni/ae Association.

Yale Environmental News
Yale University
P.O. Box 208104
New Haven, Connecticut 06520-8104

Address Correction Requested

Non Profit Org.
U.S. Postage
PAID
New Haven, CT
Permit No. 526

Yale Environmental News offers information on environmental research, teaching, and outreach at Yale University. It is produced by the Yale Peabody Museum of Natural History (PM), the Yale School of Forestry & Environmental Studies (F&ES), and the Yale Institute for Biospheric Studies (YIBS).

Directors of the Environmental Partnership
Richard L. Burger
Director, Yale Peabody Museum of Natural History and Professor of Anthropology
www.peabody.yale.edu

James Gustave Speth
Dean, Yale School of Forestry & Environmental Studies and Professor in the Practice of Environmental Policy and Sustainable Development
www.yale.edu/environment

Karl K. Turekian
Director, Yale Institute for Biospheric Studies and Silliman Professor of Geology & Geophysics
www.yale.edu/yibs
<http://love.geology.yale.edu>

We welcome submissions from faculty, staff, and students.

To submit an item, please contact:
Rose Rita Riccitelli, Editor.
Tel: 203.432.9856
Fax: 203.432.9927
E-mail: roserita.riccitelli@yale.edu

Submission Deadlines for Future Issues
Fall 2002: October 1, 2002
Winter 2002: February 1, 2003