

UMaine Today

CREATIVITY AND ACHIEVEMENT AT THE UNIVERSITY OF MAINE

NOVEMBER/DECEMBER

2005



Red Air

How could
blacklisting
happen in the
Golden Age
of radio?

President's Message

Photo by Laura Giorgio



AS A "HUMAN ORGANISM," the University of Maine will prosper to the extent it interacts publicly, honestly and effectively with its environment, said Robert Edwards, president emeritus of Bowdoin College and a member of the University of Maine Board of Visitors, in his keynote address during my installation ceremony Sept. 23. As a land-grant university, he added, this has always been our enduring strength and opportunity.

As emphasized by President Edwards, the highest calling of higher education is to meet the rapid changes in the world around us through adaptation, innovation and leadership. At UMaine, we have started the process by establishing a new model for how a public university, especially Maine's land-grant university, can serve the needs of the state and its citizens. This new model aspires to capture — to actualize — the spirit of "the people's universities." It's an intent put forth by visionaries whose ideas revolutionized American higher education nearly 150 years ago when they suggested that the university and community share an intricate bond.

This new model involves being responsive and flexible enough to adapt to changing societal needs, while capitalizing on our individual and collective strengths. It also means greater collaboration with other institutions, and taking a leadership role in creative efforts to pool resources and expertise.

Collaborations with other educational and research institutions, and the integration of UMaine across the state, exemplify the new and unique model for a land-grant university. UMaine is in a position to contribute through partnerships, creative planning and mobilization to solve some of the state's most urgent problems. And it's not just our scientists and engineers who will contribute. While we have the ability to solve the technical problems associated with technology, we must also be prepared to solve the social, ethical and policy issues, and they often require the most creativity.

It is through this collaborative approach — the new model — that UMaine will find its way to an exciting future. We have so much going for us now, and I believe we are on the way to accomplishing extraordinary things that will have untold benefits to society.



Robert A. Kennedy
President



ON THE COVER: American radio was in its heyday in the 1940s. In addition to the news and entertainment was a myriad of commentary the likes of which this country has never heard. But the government had a foreign policy agenda that took priority over domestic issues. When liberal and leftist commentators dared to question the motives of the Cold War, they were labeled communist and unpatriotic, and forced off the air. Research by University of Maine Professor of History Nathan Godfried sheds a bright light on the pre-McCarthy era, when anticommunism was a way to rid the airways of criticism. The story starts on page 10.

Illustration by Michael Mardosa

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University of Maine profile

Located in Orono, Maine, the University of Maine is the state's land-grant and sea-grant institution. UMaine serves its home state through its explicit statewide teaching, research, and public service outreach mission. Offering 88 bachelor's, 64 master's and 25 doctoral degree programs, UMaine provides the most varied and advanced selection of programs available in Maine. The Carnegie Foundation for the Advancement of Teaching classifies UMaine as a Doctoral Research Extensive University, the highest classification.

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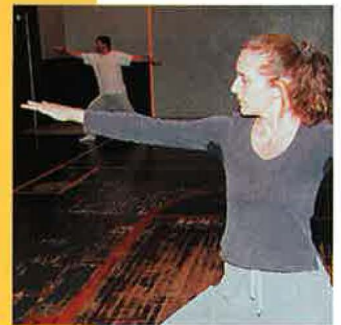
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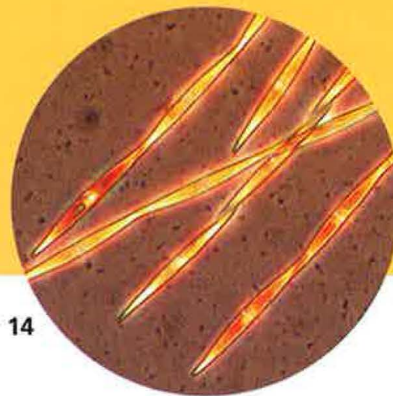
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In Maine, freshwater mussels have no commercial value and aren't good to eat. But their ecological function is important. That's why UMaine wildlife ecology experts and state biologists are working together to ensure their survival.

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Geodynamicist Peter Koons is a world leader in understanding the interactions among tectonics, surface evolution and climate change. His models characterizing the evolution of the landscape could one day forecast how the Earth will respond to changes to come.

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Red Air

Beneath the surface of what is remembered fondly as Old Time Radio of the 1940s was a very real undercurrent that threatened to silence radio actors, writers, producers and news commentators. At stake during the Red Scare: civil liberties in the name of national security.

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In some of the deepest regions of the Pacific, oceanographers Fei Chai and Mark Wells are studying the internal workings of the marine ecosystem. Their separate research projects focus on the same tiny plants — phytoplankton.

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Cross-cultural Managing

Stephen Kneeland, a University of Maine graduate student in wildlife ecology, caught 843 freshwater fish in Maine this summer, but he didn't cook or sell a single one.

He anesthetized them.

Once the fish were out cold, he examined their gills for the presence of mussel larvae. If he found a white speck resembling a grain of salt, he carefully plucked it off and saved it. If he found a large number of larvae attached to the gills, he gave the fish a lethal dose of anesthesia and dissected the gills so the larvae could be removed later.

All of the fish whose gills were left intact went into a "recovery bucket." Once the effects of the anesthesia had worn off, Kneeland released them back into the water.

At the end of the summer, Kneeland brought all the larvae he collected to a UMaine lab where he developed a DNA method to identify the mussel species.

There are 10 species of freshwater mussels in Maine, and two of them are listed as threatened by the Department of Inland Fisheries and Wildlife. A key to protecting these two species — the tidewater mucket and yellow lampmussel — is knowing to what species of fish the larvae attach.

Most freshwater mussels depend on specific fish hosts to carry larvae on their gills or fins for a month or two. When the larvae have completed their development (actually undergoing metamorphosis from larvae to juvenile mussels while attached to the fish host), they drop off and drift to the bottom of the stream or pond, where they can live for 20 or 30 years or, in the case of some species, more than 100 years.

Scientists have not discovered which species of fish serve as hosts for most species of freshwater mussels.

"That's a huge information gap," says Beth Swartz, a state endangered species wildlife biologist and UMaine alumna. "We wanted to partner with the university to help us identify the fish hosts for at least the two species of mussels that are listed as threatened in Maine so we can make management decisions with some confidence.

"We need to know how things like building dams or changing the hydrology of a river or pond might affect the fish host because, if we don't have the fish host, we don't have the mussels."

JUDITH RHYMER, a UMaine associate professor of wildlife ecology, is leading the freshwater mussel study. She specializes in a field of research called conservation genetics, which uses genetic information to answer questions related to the conservation of endangered species. In the past, she has studied waterfowl from New Zealand, Hawaii and Madagascar to better understand differences among species, and how introduced species and subsequent hybridization threatens native populations.

Unlike species of larger, thicker-shelled mussels in the Southeast that are harvested for the lucrative Asian pearl culture market, freshwater mussels in Maine have no commercial value. They also aren't good to eat. But they serve an important ecological function. As "filter feeders," they help to keep their environments clean by filtering out bacteria and other impurities in the water.

The two threatened species of mussels live in only three river drainages in Maine — the Penobscot, Kennebec and St. George. In a recent study, Rhymer and former graduate student Morgan Kelly



North America has several hundred species of freshwater mussels; the greatest diversity is in the Southeast. About 70 percent of all species are threatened or endangered for a number of reasons, including dam construction, poor water quality, habitat alteration and degradation, introduced species and overharvesting. The yellow lampmussel and tidewater mucket are found from New Brunswick to Georgia; their numbers are dwindling throughout that range.



Conserving Mussels

*By Dick Broom
Photos by Michael Mardosa*

Research by University of Maine wildlife biologists will help the state develop management plans to protect threatened species

The two threatened species of mussels live in only three river

compared the genetic makeup of mussels of these species in different localities in those drainages.

“Maine’s rivers and streams are fragmented by hundreds of dams. We wanted to find out if the dams have fragmented the mussel populations because they prevent fish hosts from moving freely throughout the system,” Rhymer says. “Our genetic analyses found that, with a few exceptions, mussel populations were quite different among the three drainages and even within the same drainage.”

That is important to know. If a population of mussels needs to be moved because survival is threatened, state wildlife officials want to move them where they are genetically similar to the indigenous mussels. A goal is to ensure that the relocated mussels have the right genetic makeup to thrive.

“Our preference is to relocate them in the same water system, as close to the original location as possible,” Swartz says. “But we need to know what their fish hosts are and what their specific habitats are like to give them any hope of success.”

Several types of mussels, including the two threatened species, live in water impounded behind dams. If the dams are removed and the water level drops, the mussels that are left exposed will die. Dam removal also can affect the abundance of fish hosts and other critical elements of mussel habitats.

THE REMOVAL OF the 160-year-old Edwards Dam from the Kennebec River in 1999 was impetus for the current mussel research. When that dam was opened, the water level behind it dropped 10 feet, leaving hundreds of the threatened species of mussels exposed. Volunteers scrambled to snatch up and relocate as many of the mussels as possible. But there was no research on the best way to ensure the

mussels’ survival and no follow-up on how they fared.

State wildlife officials wanted to be better prepared the next time a dam was removed. They expected that to be in August 2003, when the Fort Halifax Dam on the Sebasticook River at Winslow was scheduled for removal, but that is still on hold pending

Luring a host

SOME SPECIES OF FRESHWATER mussels go to extraordinary lengths to attract fish hosts for their larvae.

In the summer, the female yellow lampmussel, one of two threatened mussel species in Maine, develops a fleshy growth that protrudes through the opening of its shell. The growth looks like a minnow and even has a dark spot where an eye would be. The other end of the growth is shaped like a tail, which the female mussel can wave back and forth in the water.

“You would swear it was a real fish, but it’s just a lure designed to attract a fish predator,” says Judith Rhymer, an associate professor of wildlife ecology at UMaine who is leading several studies of freshwater mussels.



The mantle display of



UMaine wildlife ecology undergraduate Cory Gardner and graduate student Stephen Kneeland caught 843 fish this summer, 396 of which had at least one mussel larva on their gills. Some fish were carrying dozens of larvae. It will take some time to analyze the DNA of all the larvae and match them with the species of fish they came from. In a study of fish in a laboratory tank, former graduate student Philip Wick, now a fish biologist with the Maine Department of Inland Fisheries and Wildlife, found that yellow perch is probably an important host for the yellow lampmussel, and white perch is a probable host for both of the threatened mussel species. Kneeland’s research is looking at whether the same holds true in the wild and if other fish species serve as hosts for the two threatened mussel species.

the outcome of a lawsuit.

Meanwhile, the UMaine researchers continue to gather information to help the state develop a mussel management plan.

“We knew from Morgan Kelly’s study that the mussels at Unity Pond and Sandy Stream were not genetically different from those in the Sebasticook impoundment, so those were chosen as new sites if the Fort Halifax Dam came out,” Rhymer says. “But first we wanted to do some translocation experiments to get our techniques down.”

drainages in Maine — the Penobscot, Kennebec and St. George.

LAST YEAR, graduate student Jennifer Kurth, who is co-advised by Cyndy Loftin, an assistant leader with the USGS Maine Fish and Wildlife Cooperative Research Unit, took some nonthreatened mussels from above the dam on the Sebasticook. She attached PIT (passive integrated transponder) tags to their shells with dental cement and moved them to

summer counting mussels and estimating the population size of the two threatened species above the Fort Halifax Dam on the Sebasticook River. She also tagged some of the threatened species from the Sebasticook impoundment and moved them to Unity Pond and Sandy Stream. Next summer, she'll return to check on them.

"Learning how to do the surveys, getting baseline population information and experimenting with relocation techniques is important work," Swartz says. "The point is to learn as much as we can so that, as resource managers, we can do a better job of protecting these threatened species."

She expects the threat to mussels to increase over the next few years as more hydroelectric dams in Maine are decommissioned. It is often less expensive to remove an inoperative dam than it is to maintain it.

North America has several hundred species of freshwater mussels; the greatest diversity is in the Southeast. About 70 percent of all species are threatened or endangered for a number of reasons, including dam construction, poor water quality, habitat alteration and degradation, introduced species and overharvesting. The yellow lampmussel and tidewater mucket are found from New Brunswick to Georgia; their numbers are dwindling throughout that range.

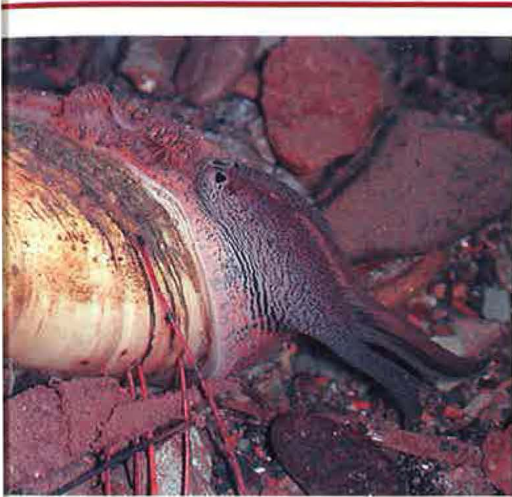
As important as freshwater mussels are ecologically, Rhymer says, they don't get much respect because they are invertebrates — they aren't warm and fuzzy — and they live out of sight. Unlike Maine, many states do not even acknowledge the importance of invertebrates by protecting them.

"Our research is drawing attention to these species within the state and giving the endangered species biologists more tools to work with," she says. "They need all the ammunition they can get in terms of understanding and protecting mussels." ■

Unity Pond and Sandy Stream. She went back to check on them this summer.

With the assistance of Joe Zydlewski from the USGS Cooperative Research Unit at UMaine, Kurth was the first person to use a PIT tagging system in mussel research. She was able to find about three-quarters of the mussels that she moved last year, and most of them seemed to be doing well. Scientists using ordinary numbered tags typically find only about 20 percent of their mussels.

Kurth spent the latter part of this



A female yellow lampmussel (*Lampsilis cariosa*). Photo by Philip Wick

"When a fish comes along and chomps down on the lure, it triggers the mussel to release her larvae into the fish's mouth."

The larvae attach themselves to the fish's gills, where they stay until they are mature enough to drop off and survive on their own.

"The fish lures are an amazing evolutionary adaptation," Rhymer says. "Some species of mussels don't use lures, but among those that do, there is a remarkable variety."



Wildlife ecology undergraduate Rebecca Clark monitored the receiver in the canoe while graduate student Jennifer Kurth swept the river bottom with an antenna, which emitted an electronic signal when it came within range of a PIT (passive integrated transponder) tag. The signal also indicated the code number of the tag, identifying the specific mussel located. Kurth found about three-quarters of the mussels she had relocated last summer from the Sebasticook River to Unity Pond and Sandy Stream. "If I didn't see it sitting partially out of the substrate, I would dig for it," Kurth says. "I wanted to confirm that we had the right mussel, that we weren't picking up a signal from a tag that had gotten knocked off." Assisted by Joe Zydlewski of the USGS Cooperative Research Unit at UMaine, Kurth was the first person to use a PIT tagging system in mussel research.

Moving Mountains

In Namche Barwa in eastern Tibet, the Tsangpo River gorge is one of the deepest and steepest on Earth. This erosional incision focuses tectonic deformation into the region, forming a "tectonic aneurysm." Top photo: The west face of Namche Barwa rises almost vertically from a glacial moraine that once blocked the Tsangpo. Inset photo: Colleagues Dave Crow from the University of Otago and Peter Koons from the University of Maine in eastern Tibet.

Photos courtesy of Peter Koons

Geodynamicist Peter Koons studies the activity of the world's highest peaks to model the evolution of the Earth

By Margaret Nagle

MAINE NATIVE PETER KOONS has long harbored a fascination with the intrinsic beauty and mystery of high mountains. It's when he started asking why the world's high mountains occurred that the summits captured his scientific attention and he saw them for what they are — anything but static.

"A lot of influence came from the New Zealand mountains that are exceptionally active. They go up quickly and come down quickly," says Koons, who today is one of the world leaders in understanding the interactions among tectonics, surface evolution and climate change. "It's there that I first formed an image in my mind of how quickly plate tectonics work and how quickly the Earth is behaving."

Koons was 17 when he left Maine to study in New Hampshire, New Zealand and Switzerland. He was climbing mountains in the western United States and Canada, but it wasn't until he went abroad and lived for 26 years that he came to understand the dynamics of the world's mountains.

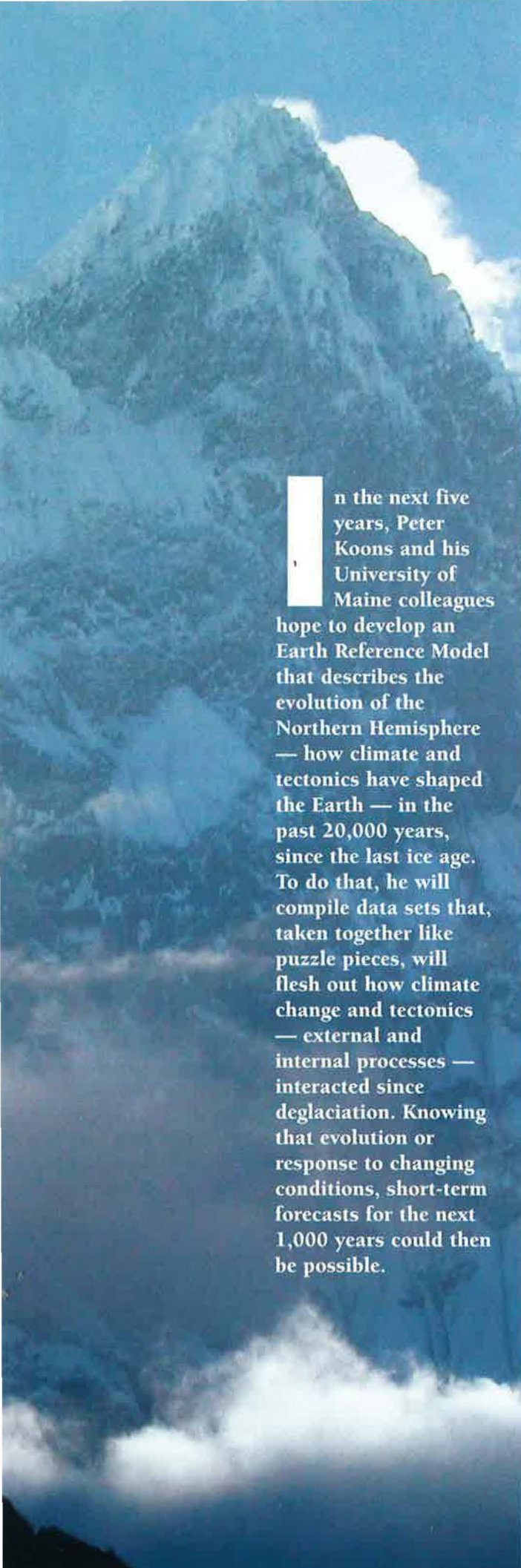
His research has taken him to the most active mountain-building regions of the world. In New Zealand's Southern Alps, where earthquakes and 12 meters of rain a year can bring down huge chunks of earth, the size and shape of mountains can change year after year. Similarly in the western and eastern Himalayas of Pakistan and Tibet, landslides and earthquakes quickly move earth that causes a chain of events that alter the landscape. He also has focused on Norwegian Caledonides and Alaska's Mt. St. Elias range, where tectonics and surface processes are extremely active.

"Mountains are vertical perturbations to both earth and atmosphere, and as such are remarkably sensitive to the behavior of both, providing the most vigorous links between earth and air," says Koons, an associate professor of Earth sciences at the University of Maine. "The shapes protrude into the atmosphere, changing local climate."

The key is in knowing how plate tectonics affect climate, and how climate affects the evolution of mountains at tectonic plate boundaries.

KOONS IS A GEODYNAMICIST who uses continuum mechanics to understand the powerful links between earth and atmosphere. He compares data sets from natural mountain belts with mathematical or numerical three-dimensional computer models to hypothesize about mechanisms and rates of geologic processes. His goal is to characterize the evolution of the Earth's lithosphere or crust to understand the causes and effects of changes in the landscape, and then to forecast how the Earth will respond to future changes.

In particular, Koons seeks to understand the forces of nature such as deglaciation and erosion that put significant strain and stress on the Earth surface, resulting in changes above and below ground. Modeling how the



In the next five years, Peter Koons and his University of Maine colleagues hope to develop an Earth Reference Model that describes the evolution of the Northern Hemisphere — how climate and tectonics have shaped the Earth — in the past 20,000 years, since the last ice age. To do that, he will compile data sets that, taken together like puzzle pieces, will flesh out how climate change and tectonics — external and internal processes — interacted since deglaciation. Knowing that evolution or response to changing conditions, short-term forecasts for the next 1,000 years could then be possible.

Earth responded in the past could allow us to predict future strains and the landscape-altering events. But the challenges are many. Historical data sets often are incomplete, which is why the modeling Koons has developed has the ability to glean information from other disciplines, such as climatology and archaeology. In addition, geological data tends to stretch out over long time frames of millions of years; Koons wants to reduce those time frames in order to make more relevant forecasts.

“We can use the information we have within the reference frame to make forecasts,” Koons says. “We will not be predicting earthquakes and hurricanes, but forecasting the general probability of various events. I’d like to see it involved in policymaking.”

Other challenges in geophysics are found in the paradoxes or the counter-intuitive realities of how plate tectonics and climate change interface. For instance, it seems logical that high mountains, which intercept more moisture, would be sites of the highest erosion rates. But numerical modeling demonstrates that assumption to be flawed in the most active mountains, where elevations are reduced where erosion rates are highest. These high erosion rates, in turn, focus deformation, which, in turn, affects the incidence of earthquakes.

At corners or syntaxes where tectonic plates meet, as in Nanga Parbat in the northwest Himalayan range and St. Elias in Alaska, unusually fast exhumation (uplift and erosion) leads to very high mountains and rocks exposed at the surface that less than a million years ago were buried many kilometers deep in the Earth at temperatures up to 700 degrees C. When rivers carry soil and rock downstream, the Earth’s crust thins, reducing pressure on the underlying rock layers and allowing them move to those low-pressure zones of mountainous regions. Koons and his Himalayan colleague Peter Zeitler characterize the phenomenon as a “tectonic aneurysm.”

“Vertical perturbations caused by erosion and exhumation alter the thermal and, therefore, the strength profiles of the Earth,” Koons says. “This thermal/deformation feedback causes the greatest mountain elevations to form adjacent to areas where erosion is most vigorous.”

THE MODELING KOONS DOES encourages geoscientists like Terry Pavlis of the University of New Orleans to “think differently” about the changes occurring in the world’s high, active mountains. For Pavlis, the principal investigator on the five-year, \$4.5 million St. Elias Erosion/Tectonics Project (STEEP), modeling has helped characterize the dynamics of plate boundary processes, including huge, rapid geological changes taking place on time scales of half a million years or less.

As a member of the NSF team studying St. Elias, Koons is developing a comprehensive model to explain the evolution of the Gulf of Alaska, including the origins of mountains and the interaction of crustal processes, such as the redistribution of mass by glacial and stream transport. The results will have implications for understanding global mountain-building processes at continental margins and the influence of those processes on climate.

Pavlis says Koons' modeling is the glue making the multidisciplinary STEEP a coherent research effort. Designed as a study of the evolution of the highest coastal mountain range on Earth, STEEP is a 10-institute collaborative involving the Universities of Alaska, Texas, Utah, New Orleans, Maine and Washington; Lehigh, Virginia Tech, Purdue and Indiana universities.

"Making predictions with models that can then be tested with continued fieldwork is a huge step," says Pavlis, who is doing research in the UMaine Numerical Modeling Facility after the temporary closing of the University of New Orleans because of Hurricane Katrina. "With STEEP, we're partly there all ready. Now having Peter and me sitting at the same computer as we do the modeling will only accelerate the process."

THE MODELING TAKES INTO account a complex system of forces that, when acting together, reach thresholds that bring about qualitative change. Phenomena like dramatic continental deglaciation set several forces in motion, crossing a threshold that has a massive effect not only on the Earth, but also on subsequent society. In recent years, discoveries of evidence of rapid and often big shifts in climate by UMaine scientists Paul Mayewski, George Denton and others have given Koons more and more information to condition his models.

"I would not be doing this project if I didn't know those shifts occurred on what appears to be the static Earth," Koons says. "In addition, we're looking at information from archaeology and other areas to learn about societal behavior that occurred in response to deglaciation and sea level changes."

In the next five years, Koons and UMaine colleagues hope to develop an Earth Reference Model that describes the evolution of the Northern Hemisphere — how climate and tectonics have shaped the Earth — in the past 20,000 years, since the last ice age. To do that, he will compile data sets that, taken together like puzzle pieces, will flesh out how climate change and tectonics — external and internal processes — interacted since deglaciation. Knowing that evolution or response to changing conditions, short-term forecasts for the next 1,000 years could then be possible.

"To me, the Northern Hemisphere is most interesting because of the effect of the concentrated continental land masses. Here we can look at the changing terrestrial boundaries and the response of ecosystems to the removal of ice.

"What we're doing is describing the Earth's response to changing glacial cover, sea level change and weathering of the surface as a reflection of what's happening below the surface," he says.

Today, the behavior of Greenland's retreating ice cover provides a modern-day window into the early stages of deglaciation in Maine. Koons hopes that the high mountains of Greenland will soon be the next focus of his research with colleagues. ■



Photo by Bill Drake

Katrina prompts UMaine stay

Geophysicist Laura Serpa and geoscientist Terry Pavlis have spent their professional careers studying how forces of nature have sculpted the Earth over millions of years. In late August, they witnessed what a Category 4 hurricane can do in a matter of hours.

The couple, University of New Orleans faculty members who live in Bay St. Louis, Miss., are among the more than million people displaced by Hurricane Katrina. In late September, Serpa, Pavlis and their two cats came to the University of Maine at the invitation of colleague Peter Koons and the Department of Earth Sciences. They have been living in a residence hall on campus and working in the department's Numerical Modeling Facility until the time is right to go home.

"People ask us, 'Why go back?'" says Serpa. "But I can't think of any place where nature doesn't have some kind of trick. It's a matter of trying to understand nature and withstand it."

For the past two decades, the pair has lived and worked on the Louisiana/Mississippi coast. They commute 50 miles from their home on St. Louis Bay to the University of New Orleans, where they are professors in the Department of Geology and Geophysics.

Serpa's research focuses on the geological evolution of Death Valley. For more than 20 years, she has been collecting data and doing structural mapping in the California national park. For the past decade, she also has spearheaded her department's minority recruitment program. Her latest National Science Foundation proposal is for the creation of a middle school multidisciplinary science curriculum.

Pavlis is a tectonic geologist who has spent every summer but one in the last 28 years doing research in the mountains of Alaska. Pavlis is the lead investigator on the \$4.5 million NSF Continental Dynamics St. Elias Erosion/Tectonics Project (STEPP), which focuses on the links between climate and tectonics in a region characterized by active glacial erosion and massive earthquakes.

Serpa was attending a conference in Colorado when news of the impending hurricane reached her. The day before the hurricane hit, Pavlis was putting plywood over the windows of their home when he felt the wind pick up from the east. Within an hour, with the storm still 300 miles off shore, the water level rose 3 feet.

"I knew it was time to get out," says Pavlis. "I threw stuff in the car, picked up the two cats and left. I still thought I could put stuff on top of tables so the water wouldn't reach it. In the end, all the effort didn't make a difference."

In their seaside neighborhood of 200, only the shells of their house and three others remained. The high water mark in their home showed that the storm surge was 26 feet above sea level. Mud inches deep was upstairs and down. The walls of a neighbor's house were in their live oak tree.

At the University of New Orleans, the building their department shares with psychology sustained water damage. Mold and the remains of laboratory rats that died during the storm posed the biggest health concerns.

Pavlis evacuated to Baton Rouge, where he rendezvoused with Serpa. They had several offers of places to stay, but chose UMaine for the research facilities that allow them to continue their work on STEEP.

LOOKING OUT over the acres of peat bogs and woods at Sunhaze Meadows National Wildlife Refuge in Milford, Maine, University of Maine senior Julia McGuire sees lessons in environmental education just waiting to be written for schoolchildren.

The ecology and environmental sciences honors student is developing a winter ecology curriculum for Sunhaze as her honors thesis. She is studying whether environmental education, namely the community's knowledge about and use of the refuge, can affect policy. Her goal is to offer educational lessons that can be incorporated into classrooms, "developing outreach and support in the community from the bottom up."

McGuire has spent the past year conducting research about the status of national wildlife refuge educational outreach efforts in Maine, and studying Spanish and tropical ecology in Costa Rica. She was recently named one of 81 Morris K. Udall Foundation Scholars for her outstanding potential and commitment to pursuing a career related to the environment.

McGuire traces her interest in environmental education to a nature camp she attended as a youngster near her home in Augusta, Maine. When she was too old to participate as a camper, McGuire volunteered and later worked to help with the nature-oriented lessons.

At UMaine, McGuire discovered that a degree in ecology and environmental



Environmental education as a policy tool

sciences, coupled with a Spanish minor and honors coursework, gave her a breadth of academic experience that informs her research in environmental education. In addition, she has taken advantage of other learning opportunities at the university.

Last year as a Margaret Chase Smith Public Affairs Scholar, McGuire surveyed Maine's national wildlife refuges to better understand the status of their educational programming. Of the eight areas she contacted, McGuire found limited or no resources available to devote to environmental education.

"Environmental education raises more awareness, helping to create a bond between the refuge and surrounding communities," says McGuire. "National refuges are wonderful resources that need to be tapped."

In Heredia, Costa Rica last semester, McGuire studied tropical ecology and Spanish. In particular, she learned about environ-

Throughout the past year, Julia McGuire has been a volunteer at Sunhaze Meadows National Wildlife Refuge. Her activities included participation in neotropical migratory songbird surveys.

Photos by Michael Mardosa

mental education programs that involve teacher training and classroom curricula. "The environmental education made applicable to students' lives was an inspiration for me," she says. "It would be a great experience to work in Latin America."

Study Abroad was an important part of her college experience. "I'm interested in a world perspective, a global base of knowledge," McGuire says. "We live in a really big world, but everything is so interconnected. Policies in the United States can affect others in the world. It's important to understand their perspectives."

This past summer, McGuire had an internship with Planning Decisions in Hallowell, Maine, helping create a database of information on property ownership in the state's unorganized townships. The data, including private/public ownership and seasonal/year-round status, will help state land use planners better understand shifts in property ownership in those areas in the past decade.

"It's interesting to see what's going on in our state," she says, especially in light of recent proposals to develop some of Maine's North woods.

McGuire is headed to graduate school to study environmental policy and management. "I'm interested in environmental education and its use as a policy tool," she says.



Historian studies the Cold War culture that silenced liberal and leftist news commentators in radio's Golden Age

By Margaret Nagle



In the 1940s, radio had it all.

Early in the decade, Franklin Roosevelt talked to the nation in a series of Fireside Chats. In 1945, millions sat by their radios to “attend” his funeral. Edward R. Murrow vividly took Americans onto a London rooftop during a blitz and into Buchenwald after the liberation of the concentration camp. From a small town in Missouri, with Harry Truman at his side, Winston Churchill delivered his “Iron Curtain” speech to a crowd of 40,000 — and the world.

We cried at the up-to-the-minute news of Pearl Harbor and D-Day, and got goose bumps listening to weekly episodes of “Suspense” and “The Shadow.” We thrilled to the adventures of Sam Spade and Philip Marlowe, laughed at the antics of characters in “The Great Gildersleeve.” Red Skelton, Arthur Godfrey, Fred Allen and Jack Benny were household names.

In addition, scores of news commentators of varied political ilk helped us make sense of the rapidly changing world, providing more social and political views of our nation's foreign and domestic agen-

RED AIR



Photos far left: In 1948, members of the House Un-American Activities Committee included, left to right, Rep. Richard Vail; Rep. Parnell Thomas, then chair of the committee; Rep. John McDowell; Robert Stripling, chief counsel; and Rep. Richard Nixon. A 1947 photo of a committee hearing shows H.A. Smith swearing in Rep. Parnell Thomas. Also shown are Reps. Richard Vail, John McDowell and Richard Nixon.

Photos courtesy of the Library of Congress, Prints and Photographs Division, from the *New York World-Telegram* and *Sun* Newspaper Photograph Collection, LC-USZ62-119692 and LC-USZ62-113251.



das than has been possible at any other time in U.S. history, according to University of Maine historian Nathan Godfried.

But beneath the surface of what is now remembered fondly as Old Time Radio was a very real undercurrent that threatened the voices and livelihoods of thousands of radio actors, writers, producers and news commentators throughout the decade. By 1950, that undercurrent became a riptide.

At stake were civil liberties in the name of national security.

Long before Sen. Joseph McCarthy's sensational four-year reign of terror to root out communists, Soviet spies and fellow travelers who purportedly threatened the underpinnings of democracy and the American way of life, there was the United States House of Representatives Un-American Activities Committee (HUAC). Created in 1938 as a temporary investigation unit to examine un-American propaganda, HUAC spent its early years searching out communists in labor unions, New Deal programs and the American Civil Liberties Union.

HUAC became a permanent committee in 1945; the post-World War II years witnessed its most active and controversial period.

Beginning in 1946, HUAC issued general reports on subversive activities based on its hearings. The first report contained a section on the radio broadcasts of "certain unnamed liberal commentators." The committee found the commentators to be pro-communist and pro-Russian based on their verbal attacks on the State Department, presidential appointees, European and Latin American governments, Gen. Douglas MacArthur and Chiang Kai-shek. The 1946 annual report went on:

"From the review of scripts of several news commentators, it appears that several of the so-called 'liberal' commentators are all receiving information from the same source . . . Many individual Members, and Congress as a whole, are slandered, maligned and ridiculed by certain commentators in what appears to be a well-organized campaign to break the confidence of the American people in our elective system and representative form of government. Some of these loud-mouthed troublemakers can hardly speak English. America has given them refuge and they in return seek to destroy our constitutional form of government."

Thus, according to Godfried, HUAC contributed to "an environment demanding ideological and political conformity during the late 1940s. It was part of the formal and informal, institutional and individual, public and private sector mechanism that sought to suppress liberal and leftist radio commentators, ultimately contributing to the strangling of an open debate about the efficacy or even the necessity

of Cold War political and economic policies."

The commentators that HUAC directly and indirectly attacked performed an essential service for the American public. "Their critical and insightful assessment of the news proved particularly crucial in the crisis period of the early Cold War. Citizens required an array of perspectives in order to make informed decisions involving war and peace, civil liberties and human rights. Yet, precisely during a crisis period, journalists experienced pressures to toe the party line," says Godfried, a specialist in the history of mass communication and American labor, who has spent the past six years researching news commentators of the 1940s.

Reform has a way of waxing and waning in America — a tendency to go through reform and then react to it, says Godfried. With the Depression, the reform impulse took the form of the New Deal and the rise of organized labor as a significant force. The post-World War II era was a time of reaction.

America's heavy military spending during World War II pulled the nation out of the Depression and helped it become a world economic power. Both business and political leaders sought to secure an American-defined world order of economic internationalism and collective security, Godfried says. A recalcitrant Soviet Union, a defeated Germany and Japan, and an anti-imperialist and nationalist Third World all threatened to obstruct American domination abroad. At home, working-class organizations, civil rights activists and other groups committed to continuing social reforms posed challenges and threats to the domestic and foreign policy agendas of national leaders.

The Truman administration developed strategies like the Marshall Plan in 1948 to aid war-torn Europe and to stem the spread of communism. But the majority of Americans seemed little interested in establishing a permanent war economy and supporting foreign expansionism, Godfried says. The left-liberal coalition that developed during the Depression and World War II had the potential of addressing significant social and economic issues. It railed at what it saw as an aggressive foreign policy obliterating domestic and international reform.

"The government was concerned with sustaining its international role, and that involved maintaining a consensus for an active foreign policy," says Godfried. "That's where the Red Scare became so crucial; having a viable enemy out there — the Soviet Union —

RED★AIR

helped to galvanize popular support for the policymakers' global agenda. But we must be clear that the agenda existed independent of any international conspiracy."

Those who questioned the nation's ramping up for the Cold War were soon labeled unpatriotic and communist. It didn't help that in the late '30s, people indirectly or directly affiliated with the Communist Party were linking with other leftists in their support of Roosevelt's reforms, particularly economic reforms, Godfried says. Many of the leftist and liberal radio commentators of the 1940s participated in progressive social movements that emphasized working-class and industrial democracy, ethnic Americanism, civil rights and an indigenous version of social democracy. With their political activism sharpening their analytical skills, these commentators contributed to the maturation of radio news.

"Radio commentary had grown in the decade of the '30s from a curiosity to a concatenation of voice with the power to influence political decisions and, by the end of World War II, to a vital, mature force in our democracy," according to University of Minnesota journalism professor Irving Fang in his book *Those Radio Commentators!* "Five years later, by 1950, its power had waned," weakened in part by the Red Scare.

In his often-cited volume *The House*

Committee on Un-American Activities, 1945–1950, Dartmouth political scientist Robert Carr noted in 1952 that "efforts to safeguard national security cannot be condemned out of hand because of the danger that such efforts, if badly conceived or unwisely administered, may jeopardize civil liberties.

At the same time, a free people must be ever on guard lest this rationalization be used to justify unnecessary encroachments by government upon the individual's freedom."

In the end, writes Carr, the U.S. must find "a satisfactory balance between the demands of national security and the interests of individual freedom."

Problem was, HUAC acted more like a lightning rod than a balancing force. According to Carr, no Congressional investigating committee provoked more controversy or criticism, or was more bitterly attacked or more vigorously defended.

Drawing on HUAC's hearings and reports, three ex-FBI agents in 1950 published a booklet titled *Red Channels: The Report of Communist Influence in Radio and*

Television. The infamous 213-page *Red Channels* listed people, organizations and publications purported to have ties to communism. Among those people cited for their ties to communist organizations: conductor Leonard Bernstein and composer Aaron Copland, author Lillian Hellman,

actors Orson Welles and Burgess Meredith, playwright Arthur Miller, folksingers Burl Ives and Pete Seeger. Radio actors, writers and directors also made the list, as well as radio news commentators: Rod Holmgren, Lisa Sergio, William S. Gailmor, William Shirer, Johannes Steel and J. Raymond Walsh.

In a 1951 *New York Times* story, "Conspiracy of Silence," the paper's radio editor Jack Gould described the effect of the blacklisting: "The vicious 'controversiality' policy in effect has circumvented all the traditional safeguards of due process and fair hearing. The person named in *Red Channels* is 'controversial' per se; his innocence or guilt is now beside the point so far as many — if not most — prospective employers are concerned."

It turns out that by the time the blacklist was published, all six commentators listed in its pages had been forced off the air. The "spectrum of parameters" of what was permissible on-air discussion was dramatically restrained. Sponsors were increasingly gun-shy about being linked to controversy, newspaper columnists toned down their critical volume and some alternative papers were dead.

Americans should never forget the convergence of forces during the heightening of the Cold War that made it difficult for these people to continue, says Godfried. "Anticommunism was a way to get rid of a lot of annoying criticism, like Holmgren's analyses of domestic policies or Walsh's assessment of foreign policy. The Cold War became a mechanism for debilitating or silencing advocates for civil and labor rights or nuclear nonproliferation, or at least putting them on the defensive."

Years later, activists in the women's and civil rights movements who had ties to some of the blacklisted organizations



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Nathan Godfried

"Fire"



Reprinted with the permission of the Herb Block Foundation, from *Herb Block: A Cartoonist's Life* (Time Books, 1998); image made available by the Library of Congress, Prints and Photographs Division, "Fire!" June 17, 1949, reproduction from original drawing published in the *Washington Post*.

distanced themselves from those radical roots in order to not be painted with the broad red brush.

"Even now, what happened to them (the radio news commentators) remains a touchy subject," says Godfried. "There's a sense on the part of some blacklisted victims that it was all a misunderstanding; that their accusers simplistically equated being a communist or fellow traveler with spying for the Soviet Union and betraying the United States. These people had legitimate causes, especially social justice causes, that were dear to

them, and they did not and do not want them smeared or dismissed out of hand."

What distinguished Holmgren and other radio news commentators was their commitment to fundamental reform in American life, says Godfried. "They saw their role as journalists as having an important educational function. None of them engaged in propaganda; as journalists, they believed they were speaking truth to power and informing their listeners that the emperor often had no clothes. It was advocacy journalism on some level."

Godfried characterizes the leftist radio news commentators of the 1940s as "organic" intellectuals. "They were politically active and they acquired knowledge of the world not just from studying at universities, but by participating in mass movements," he says. "They showed that it's altogether proper to question public policy — even in times of national emergency. That's not aiding the enemy, but enlightening people."

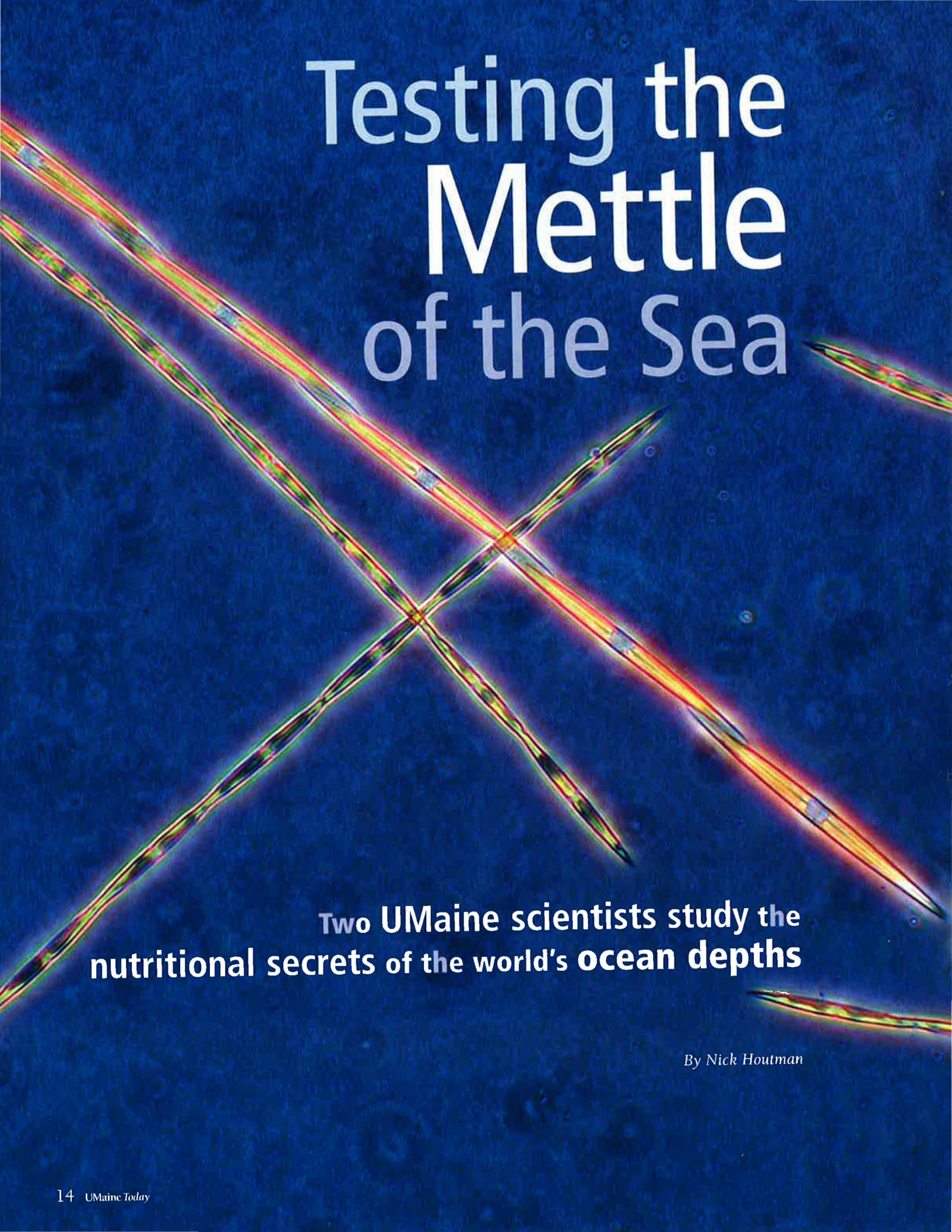
A society that purports to be a democracy must have information, Godfried says. That was true yesterday, and it's true today.

"I don't believe history repeats itself; that's too simplistic," says Godfried. "But there are parallels that can give us some insight. We must be aware that people in power use history for their own purposes, especially how they want us to remember events like the dropping of the atomic bomb or the aftermath of Sept. 11.

"Officials hope to build consensus about such events and that allows them to carry out policies. That's why it's important for people to protest and to offer alternatives, even radical alternatives, without being dismissed as traitors."

Soviet expansionism after World War II generated legitimate security concerns, just as the Sept. 11 terrorist attacks did, Godfried says. But America's Cold War leaders manipulated the fear of external Soviet expansionism and internal communist subversion. The nation's most conservative elements used the Cold War political culture for their own purposes.

"The leaders of America's war on terrorism, like their Cold War predecessors, remain committed to a world dominated by the United States and remade in its image," says Godfried. "They rely on public acquiescence to legitimize their agenda. We continue to need political commentators like those blacklisted radio personalities of the 1940s for critical and alternative perspectives." ■

The background of the entire page is a dark blue, textured surface. Overlaid on this are several elongated, spindle-shaped biological structures, likely diatoms or similar marine organisms. These structures are highly reflective and show a vibrant, iridescent color palette of reds, oranges, yellows, and greens, giving them a shimmering, almost crystalline appearance. They are arranged in a crisscross pattern, with some running diagonally from the top-left to the bottom-right, and others from the top-right to the bottom-left.

Testing the Mettle of the Sea

Two UMaine scientists study the
nutritional secrets of the world's **ocean depths**

By Nick Houtman

N OCEANS AROUND the world, tiny plants at the bottom of the aquatic food chain are as crucial to the marine ecosystem as grass is to the prairie. And their effects go beyond the sea. They influence atmospheric chemistry, particularly concentrations of carbon dioxide, a greenhouse gas that currently is at the crux of debates over global warming.

In separate projects in the Pacific in 2004, University of Maine oceanographers Fei Chai and Mark Wells boarded ships with colleagues from around the globe to study the physical and chemical factors that control phytoplankton. Their focus: the internal workings of the marine ecosystem. Rather than studying coastal waters where phytoplankton are usually abundant, they go to unusual deep ocean regions where phytoplankton tend to be less productive.

Until recently, some of these areas,

comprising about 30 percent of the sea surface, posed a long-standing mystery in marine science. While they appear to have enough of the nutrients that phytoplankton need to grow, the seasonal crop is smaller than expected. Something is holding it back.

That something turns out to involve two critical nutrients — iron and silicate. A major group of phytoplankton, the diatoms, needs both. When one or both of these nutrients are in short supply, diatoms are stuck on idle. They fail to grow and reproduce. Other nutrients such as zinc, cobalt and nickel also play a role in phytoplankton growth, but scientists are just beginning to understand how they all work together.

Research by Wells and Chai stems in part from the so-called iron hypothesis, first published in the journal *Nature* in 1989 by oceanographer John Martin. For more than a century, scientists puzzled over the phytoplankton deficit in three regions: the equatorial and North Pacific, and the Southern Ocean around Antarctica.

Speculation that iron is key goes back to the 1930s, but it took the development of a new experimental technique to find the answer. Martin created a method to give scientists precise control over iron concentrations in their samples. Using it, he demonstrated that iron was indeed the missing ingredient in those regions.

But Martin didn't stop there. Since growing plants take up carbon dioxide, he also suggested that natural increases in iron inputs to the oceans during the geologic past may have removed enough carbon from the atmosphere to affect global

climate, perhaps even contributing to the onset of ice ages.

Martin died in 1993 just as tests of his ideas were getting under way. Since then, scientists have embarked on a dozen experiments in phytoplankton-deficit regions to determine how iron and other nutrients promote phytoplankton growth.

"In science, it can take a dozen experiments to understand the fundamental principles. We're just now beginning to understand how iron and other nutrients work in the oceans," says Wells.

TO THE UNTRAINED eye, a satellite image of water temperatures in the equatorial Pacific looks like abstract art. Computer enhancement can turn upwelling regions into bright spots where water rises to the surface and brings nutrients and carbon to phytoplankton. Darker areas show the reverse, downwelling regions where water sinks, its nutrient load depleted.

Below the surface, water swirls and currents shift direction. At about 200 meters (660 feet) down, the prevailing flow has reversed and moves east toward South

America. The result is constant turbulence, changing the location of nutrient-rich waters and making it hard to

In addition to phytoplankton growth, scientists were interested in how iron concentrations change from day to day and from place to place.

Pseudonitzschia phytoplankton
Photo by Brian D. Bill, NOAA Fisheries, ECOHAB-PNW

Testing the Mettle of the Sea

predict just how phytoplankton will respond day to day.

Last December onboard the R/V *Revelle* out of San Diego, Chai and colleagues from Maine, Hawaii, Oregon and other states studied nutrient levels and phytoplankton growth over a 2,600-mile course across the Pacific. In that vast area, they were looking for the upwelling regions. Their goal was to understand how quickly diatoms and other types of phytoplankton use up the nutrient supply, and how zooplankton graze on the plants, changing the way nutrients are taken up and recycled.

There aren't many direct uptake measurements of how fast diatoms will grow under ambient nutrient limitation conditions. In order to understand these limitations, you have to measure how phytoplankton, particularly the diatoms, are doing physiologically, says Chai.

In addition to phytoplankton growth, scientists were interested in how iron concentrations change from day to day and from place to place. "This cruise is the first one to measure iron concentrations in the ocean at a large scale. In the past, you would have a few stations. In this one, because of large spatial area coverage, we can get an idea of how iron distribution responds to circulation change and atmospheric deposition," says Chai.

Scientists took water samples at 28 locations on the equator and along a north-to-south track at 110 degrees west longitude. They put samples into tanks on the *Revelle's* deck, and monitored phytoplankton growth and nutrient uptake. From some samples, they removed the zooplankton and added iron and silicate to observe the effects on phytoplankton growth.

Chai's primary interest is computer modeling. Over the last decade, he has developed a leading model that simulates cycles of nutrients, including carbon, and phytoplankton dynamics in the equatorial Pacific. Each piece of a model is a mathe-



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Fei Chai

matical equation. In Chai's case, equations reflect the latest knowledge of how different plankton species take up nutrients as they grow and release them when they die.

Being on the cruise helps scientists like Chai improve their models. "Modelers need to know how data are being collected. We are at a stage where (ocean) modeling can almost do a real-time simulation. Things are getting realistic because you have new data fed into your model with data simulation. Sometimes it's hard to separate (field) data from the model."

The R/V *Revelle* and Chai's colleagues returned to the equatorial Pacific this past September to repeat their cruise, this time from west to east. Financial support comes from the National Science Foundation and NASA.

WELLS LOOKS AT phytoplankton through the lens of chemistry. When it comes to competition for iron, he sees evidence of a kind of chemical warfare among microorganisms, including phytoplankton, that may be occurring in large areas of the world's oceans. Something odd occurs, says Wells, after iron is added to the ocean. Diatoms and other types of phytoplankton grow but then begin to starve in the midst of plenty, acting as though iron is still in short supply.

Wells' recent focus on iron stems from American participation in a Japanese research program known as SEEDS (Subarctic Pacific Iron Experiment for Ecosystem Dynamics Study), which began in 2001. The goal is to understand changes that occur in phytoplankton communities as a result of adding iron to North Pacific waters.

In July 2004, Wells served as chief scientist on the research ship *Kilo Moana* out of Honolulu. Joining him were two UMaine graduate students — Eric Roy and Lisa Pickell — and postdoctoral researcher Jennifer Boehme. (UMaine scientist Mary Jane Perry collaborates on the project.)

Also participating were scientists from the University of Western Ontario and San Francisco State University, as well as several members of the Japanese research team. The National Science Foundation and Department of Energy provide financial support.

The Americans' interest stems in part from the first SEEDS experiment in which Japanese scientists recorded the largest phytoplankton bloom of any in the iron fertilization tests. One of the unanswered questions is why diatoms showed signs of nutrient stress before the iron and other nutrients were used up.

Wells and his colleagues think they may know. Soil contains lots of iron, but most of it stays locked up in minerals, as accessible to microorganisms as the gold in Fort Knox. Bacteria and fungi have learned to scavenge what iron is available by building a trap;

they create molecules called siderophores that are able to lock up iron. And in some cases, only the organism that built the molecule has the key to unlock it, says Wells.

“It’s basically chemical warfare by the bacteria in soils, trying to get the iron. They specifically target iron with these molecules. In some cases, other bacteria have figured out ways to get the iron from molecules that they didn’t produce, pirating that iron. It’s beginning to look like the same thing may be happening in the ocean,” Wells says.

By the time Wells and his colleagues arrived at their appointed location in the North Pacific, the Japanese team had injected iron into the water and was monitoring the growing, roughly 18-square-mile phytoplankton patch.

Operating independently, the two vessels stayed in the patch for 12 days. The American team analyzed water chemistry, nutrients and microorganism diversity. Assisting their Japanese colleagues on board both vessels, Wells and the other scientists characterized how phytoplankton responded to iron enrichment. They ran experiments to learn how available the iron was in the patch, how diatoms were growing, the rate at which they were coming together in multicellular aggregations and sinking into the deep sea. Through this multistep process, some of the carbon taken up by phytoplankton can be removed from surface waters to be replaced by carbon dioxide from the atmosphere.

Early results suggest that the struggle for iron may indeed follow something like what happens in the soil, although Wells and his colleagues are still evaluating their data. Scientists are planning to return to the Pacific in 2007.

Iron is not a magic bullet for managing ocean ecosystems, Wells and Chai agree. Instead, it’s becoming clear that iron works with other nutrients to affect phytoplankton in complex ways that scientists are just starting to unravel. ■

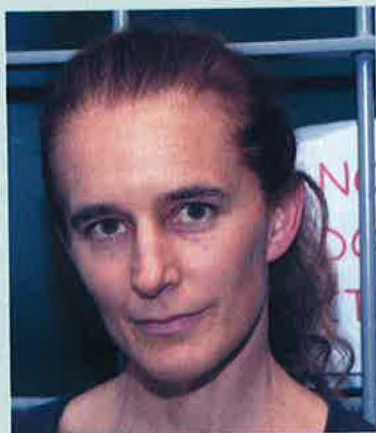


Photos courtesy of Fei Chai

From shipboard, upwelling regions in the ocean are virtually invisible. The sea appears the same dark blue in all directions. UMaine computer specialists Steve Cousins and Lei Shi in the School of Marine Sciences arranged to receive daily model-based forecasts of ocean conditions from the U.S. Navy Research Laboratory in Mississippi. They modified the data and posted it to a Web site so the oceanographers at sea would know the conditions at sampling locations or could pinpoint new places to sample.



FREE INSIDE



Photos by Bill Drake

The ancient arts of yoga, meditation and chi gung taught by Betsy Duncombe hold the key

By Margaret Nagle

INSIDE A HIGH chain-link fence topped with razor wire, behind heavy locked doors and under the gaze of security cameras and guards, 10 men train in the tradition of ancient warriors. Their exercises in meditation, strength and relaxation are designed to unify the body and mind, to evoke positive thinking and empowerment, and to encourage a caring connection between people.

The training is designed to arm inmates with self-knowledge, inner peace and compassion rather than fear, anger and violence, better preparing them to meet life's challenges, no matter what the battlefield — addiction, crime, poverty, loneliness, self-doubt.

Inner freedom is the goal for the handful of inmates at Downeast Correctional Facility outside of Machias in Bucks Harbor, Maine. The nondenominational and ancient arts of yoga, meditation and chi gung taught by Betsy Duncombe hold the key.

Duncombe, a University of Maine graduate student in social work, has been teaching yoga, meditation from different cultures and chi gung (exercises focusing on the energies in the body) for more than two decades. In the past six years, she has combined the three to start a prison program called Free Inside. Once a week since May, in what she hopes is an ongoing program, Duncombe makes the more than two-hour drive from her home in Brooksville to lead Free Inside sessions at Maine's medium/minimum security correctional facility — one for inmates who volunteer, another as part of a mandated substance abuse treatment program.

She has also taught inmates in the Hancock County Jail for a year as a member of Volunteers for Hancock Jail Residents.

Prison inmate David Mellen was encouraged by his wife to sign up. "People I know who are active in yoga have a real peace and contentment that I don't have. They're able to deal with things differently," he says. "I've

had a number of incarcerations; this sentence is nine years for heroin and cocaine. It's a hell of a cycle, but I feel this program can help me in my recovery."

The bottom line, says Mellen, is that Free Inside has already helped him learn to get along with the other prisoners, some of whom he says he wouldn't associate with otherwise because of their crimes.

The training is designed to better prepare inmates to meet life's challenges, no matter what the battlefield — crime, addiction, poverty, loneliness, self-doubt.

Gerald Clark Jr., knows those antisocial sentiments all too well. "You wouldn't have liked me before," says the middle-aged man who is serving eight years for gross sexual assault. "Before, I thought the world revolved around me. Her class showed me it doesn't. It has given me a better understanding of how things work in the world."

Isiah Neault, who is serving six and a half years for strong-armed robbery, says "it makes all the difference."

"I like the fact that it helps keep me flexible and feeling physically healthy," he says. "No matter what happens in the day, no matter how stressful, I can go back to my

room and feel a lot (better). Yoga has helped me focus on the good things and not the uncontrollable habit I left behind."

During each hour-long session, Duncombe moves her students seamlessly from one exercise to the next with step-by-step instructions laced with information on the purpose, reason and history behind each move. This day she starts with yoga, then moves into chi gung and ends with meditation — and some of the hardest lessons.

"Many in our society are unhappy because they try to avoid pain and they cling to pleasure," she tells the men, introducing an ancient Tibetan practice. "This just doesn't work. The ancients reversed the tendency, suggesting we fully acknowledge our pain, and then give pleasure, or good energy, away to others."

With breathing exercises and visualization, the students focus on positive memories and feelings of peace that can transform their pain — physical or emotional. They then turn their attention to someone they love who is in pain, someone ill or suffering emotionally. "Notice how you can now take on someone else's pain and not be overwhelmed by it; rather, you can transform it to help them," she says.

"The next step is the hardest, but maybe the most important. Focus on someone you don't like. Breathe in their pain and to them, and to yourself, breathe out peace. Carrying rage is a heavy weight. Ease your burden."

SIX YEARS AGO at the Maine State Prison in Thomaston, Duncombe first taught a daylong yoga workshop under the auspices of an AIDS awareness group. It was an inspirational experience.

"I walked into a room of skeptical, angry-looking men," she remembers from the first hour of the workshop. "By the end of the class, I was facing a room of smiling people with shining eyes. To me, that affirms the life and beauty inside everyone."



FREE INSIDE

When Duncombe and her family moved to Hawaii five years ago, she offered her program to social services agencies in Maui. A homeless shelter requested it as part of its chemical dependency sessions. For four years, Duncombe gave workshops at the shelter, where many of her students were just out of jail.

It was during this time that she also introduced her program at the Maui Community Correctional Center. She spent a year working twice a week in 12-week sessions with inmates — first men, then women — who were mandated to her program as part of their rehabilitation.

“I chose to work with inmates because they are often the most ignored. Social workers tend to feel more comfortable working with children, the elderly and physically disabled, while prisoners hold a stigma because they have often harmed others. Yet they are frequently the victims of societal and economic oppression.

“From the frustrations of people living in poverty can come a cycle of violence and drugs,” Duncombe says. “Many inmates are coming out of violent families; use of drugs and alcohol may be attempts at self-medication. Much criminal action can be traced to some injustice done, combined with a lack of coping skills to deal with that injustice. Free Inside enables both self-help and an increased empathy for others.”

THE MAINE DEPARTMENT OF Corrections allows only evidence-based programs in its prisons, requiring Free Inside and other initiatives to have proof of value and worth. For Duncombe, that quantitative proof is in her master’s research. She

was enrolled in the MSW Program at the University of Hawaii at Manoa when she began collecting quantitative and qualitative data on the effectiveness of Free Inside.

To measure the efficacy of Free Inside, Duncombe spent a year gathering pre- and post-intervention data at the Maui Community Correctional Center. She used five self-report scales, three of which are well-known measures of depression, hope and self-esteem. In addition to the CES-D Scale, the Hope Scale and the Rosenberg Self-Esteem Scale, Duncombe developed two of her own — the Physical-Mental Wellness Scale and the Life Outlook-Compassion Scale. She also conducted in-depth interviews with participants.

The quantitative measures showed an increase in self-esteem and hope, a decrease in depression, and improvements overall in physical well being, life outlook and treatment of others. The qualitative interviews overlaid these findings and revealed growth in desire to help other people. “It all pointed to improved behavior both on the inside, and potentially on the outside of prison, suggesting a likely reduction in recidivism,” Duncombe says.

Psychologist Winston Turner, an adjunct professor in UMaine’s School of Social Work, helped Duncombe analyze her research data, the results of which continue to be published.

“The fact that she found significant differences at all was rewarding — and surprising,” he says. “I didn’t expect her intervention would make such a difference in 12 weeks. I was skeptical about a prison population getting in touch with their inner selves through yoga and meditation. But

Betsy has a soothing approach, and biofeedback is going on.

“The real measure of success will be if a prison that incorporates a program like this sees a change in its population, a drop in recidivism and better transition to life outside,” Turner says.

In a prison system where the recidivism rate is 68 percent, a program like this has the potential to “motivate them in the right direction,” especially in the area of anger management, says Ralph Pennell, the program manager at Downeast Correctional Facility. “You can’t change (behavior) overnight, but if you get them thinking in a different way, it is more advantageous to them and to us.”

PURSuing A GRADUATE degree in social work was a way to “take ancient, global and nonverbal practices, and validate them in the modern academic community,” says Duncombe, who learned the importance of such a tactic from her father. David Duncombe spent almost two decades as chaplain for the Yale School of Medicine and a lecturer at Yale Divinity School, his alma mater. In 1967, his chaplaincy at Yale was one of the first at a nondenominational American medical school.

He was active in the civil rights movement, and has long been involved in peace and justice protests. In recent years, his activism has taken the form of protest fasts in the name of peace and poverty. In his social justice ministry, he has been arrested almost 100 times and sometimes jailed.

“As a university professor arrested and jailed repeatedly for his political views, my dad was effective in joining academia with



life on the streets. He would talk with inmates, guards, policemen, academics and politicians alike so that all might better understand one another. My dad taught me that no effective societal change would take place if he stayed within the safety of just one part of it," Duncombe says.

"Much criminal action can be traced to some injustice done, combined with a lack of coping skills to deal with that injustice."

"My mother consistently taught and exemplified the priorities of being kind and helping others. This day-to-day model, overlaid upon my dad's example of the same priorities in a socio-political arena, fed me with the need and desire to embody this in my life and work."

David and Sally Duncombe raised their three children in impoverished neighborhoods, with emphasis on being "one with, and respectful of, people living in difficult situations." It was a bedrock philosophy that now informs Betsy Duncombe's life. But it wasn't always an easy path to follow.

"I was rebellious and interested in being independent," says Duncombe of her adolescence. "I found myself in a downward spiral that was ultimately an invaluable learning experience for me."

In her late teens, Duncombe was sexually assaulted, a devastating experience she "numbed out" with drugs. By the time she

told her parents and sought help, she had developed an eating disorder and fallen into depression. Little changed until a friend "dragged" her to a class on yoga and whole foods. It's then, says Duncombe, that "life started to sparkle again."

"I'm grateful that I hit rock bottom and

had to pull myself out. I learned from the inside out what works. If I had not been desperate and hungry for the information, I would not know the true impact of it."

STUDENTS WHO KNOW her story appreciate her ability to relate to their circumstances. But that doesn't necessarily make teaching the ancient arts to prison inmates any easier. Duncombe's first step: Get the attention off her and onto each student, to his or her potential to experience growth and healing.

She stresses the importance of increasing strength — inner strength that doesn't hurt someone else. They are warriors preparing to fight challenges, gathering strength from the sun and the Earth.

In the face of any heckling, rude jokes and noises early on, which occurs more with mandated inmates than with those who volunteer for class, Duncombe tries to

"model the acceptance that I teach."

"In the prisons," she says, "I feel that emanating peace is the most powerful protection I have."

Duncombe has seen the results. In Hawaii, an inmate who started as a heckler ultimately helped his classmates learn their yoga positions. Her incarcerated students have shared their writing, art and personal stories with her.

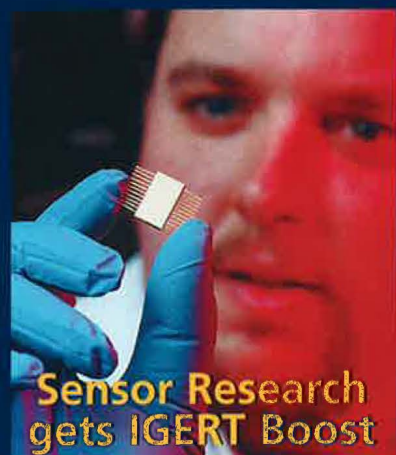
"The rewards are such that inmates often ask for longer class sessions or more of them," Duncombe says. "One man finds he's now controlling his anger on the basketball court, another is able to help his wife calm down over the telephone, another helps a cell mate with a headache or to control his asthma. I encourage everyone to work on their own outside of class, beyond the 12-week session and certainly after their release — five minutes or an hour each day, whatever they are comfortable with."

Duncombe has written a step-by-step *Free Inside* manual, detailing the methods she uses. Her hope is that *Free Inside* can spread to other prisons and jails, as well as post-release centers. She currently teaches a community class in Blue Hill, open free of charge to anyone formerly involved with corrections or substance abuse recovery.

"I hope to always teach inside the prisons," she says. "Oddly, prison is an ideal environment for this inner work because it is so stark, and the people in it have time on their hands and often a desire to pull themselves out of a destructive lifestyle."

"I've heard people talk about stereotypical social worker burnout. I can't imagine that. In this corner of the field, I am fed twice as much as I give." ■

Betsy Duncombe



Sensor Research gets IGERT Boost

BUILDING ON existing research strength and state-of-the-art infrastructure, the University of Maine will use a new five-year, \$3.16 million research award to establish an interdisciplinary graduate education program in sensor science, engineering and informatics.

Funding comes from the National Science Foundation's Integrative Graduate Education and Research Traineeship (IGERT) Program, designed to train Ph.D. scientists through interdisciplinary programs that address pressing global needs.

According to the NSF Web site, UMaine is one of only 32 institutions to receive more than one IGERT grant. UMaine's first launched the Functional Genomics Program.

The IGERT program will involve UMaine's Laboratory for Surface Science and Technology (LASST), and the National Center for Geographic Information and Analysis (NCGIA), working in cooperation with scientists in Germany, Italy, Australia and Ireland.

Over the course of five years, the program will train 20 Ph.D. students as IGERT fellows in sensor systems, including the creation of new materials and methods for the interpretation of sensor data.

Kate Beard-Tisdale from the Department of Spatial Information Science and Engineering and NCGIA is the program director and grant's principal investigator. Nineteen faculty from several science and engineering departments will be involved in the program.

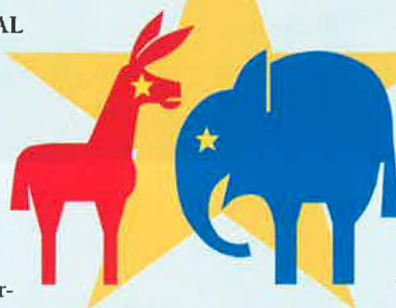
Polarized Parties

MORE IDEOLOGICAL conflict exists today between the Republican and Democratic parties when it comes to racial, cultural and economic issues than at any other time in the 20th century, according to University of Maine political scientist Mark Brewer.

In the past decade, politicians — the political elites — have become more ideological and partisan in their rhetoric, policy proposals and voting behavior, to the point that party members have become more similar in their views.

The electorate has mirrored that heightened partisanship, according to Brewer. Mass partisanship, long linked to positions on issues relating to economic equality, is increasingly evident in racial and cultural issues.

Using the American National Election Study (NES) Cumulative Datafile, Brewer found that the electorate recognizes that the parties differ widely in their stances on issues related to economic equality (i.e. government



In his study, Mark Brewer looked at just how pervasive partisanship is among the general electorate.

involvement in health insurance), racial issues (i.e. federal aid to minorities) and cultural issues (i.e. the role of women in society). His analysis also demonstrates the increased relevance of partisan conflict when voters consider the issues.

The highly polarized American political climate today, with Democrats more liberal and Republicans more conservative than ever, feeds on itself, forming a closed circuit or loop, Brewer says. "Elites polarize on issues, causing increased polarization among the mass on these same issues, which, in turn, fuels further elite polarization as politicians react to the views and demands of constituents and voters," he says, in a paper published in *Political Research Quarterly*.

"Unless something develops that serves as a circuit breaker, we are likely to witness these high levels of polarization in American politics for at least the near future."

TERRORISM

IRAQ WAR

Pre-war Press

IN THE MONTHS leading up to the war in Iraq, the Bush administration addressed the United Nations and the American people repeatedly to make the case for a preemptive strike against a nation alleged to be harboring weapons of mass destruction.

The way the administration couched the run-up to war in the context of terrorism was echoed in the news coverage by *Time* and *Newsweek*, affecting public judgment of events and policies, according to a recent analysis by University of Maine political scientist Amy Fried.

"During this period, news magazines frequently juxtaposed terrorism and Iraq, and used graphics which linked Iraq to terrorism and terrorists," says Fried, who published her study in a recent issue of the *Harvard International Journal of Press-Politics*. Some graphics gave the false impression not only that there were weapons of mass destruction in Iraq, but also that their location was known.

Fried examined how the two news magazines covered Iraq and issues of terrorism in the pre-war period. In particular, she analyzed the news content in 34 issues published in September 2002 — the month President Bush gave a speech to the United Nations citing "the dangers, in their most lethal and aggressive forms" posed by Iraq — and in January–March 2003, the final run-up to war.

Terrorism and Americans' fears about it were part of the news coverage in the months leading up to the war in Iraq. Some terrorism stories focused explicitly on evidence and arguments regarding whether Iraq posed a threat of terrorism to the United States, while other terrorism stories emphasized the ways Americans could cope with increased threats.

"This coverage reflected the confluence of events, but also officials' decisions to bring various events together in time and space," says Fried.

Manufactured Patriotism

For late-Victorian society, ambition and love of adventure were inherently linked to patriotism.



IN DECEMBER 1899, Great Britain sustained three substantial military defeats in the opening phase of the Second Anglo-Boer War in South Africa. The events of "Black Week" ended Britain's complacency concerning its military prowess and sparked a spontaneous outburst of patriotism.

It's that patriotism, a powerful force that shaped late-Victorian Britain, to which thousands of able-bodied men responded when the War Office made the decision to allow civilian volunteers to serve overseas, according to University of Maine historian Stephen Miller, in a paper recently published in the *Journal of Military History*.

The call to champion the "imperial mission" was fueled by decades of "manufactured patriotism" found in daily papers, school lessons and even music hall entertainment. Much of the nationalism first revealed itself in the period of heightened fear of invasion in the 1850s. It only grew in the decades to come, shaping British attitudes toward the European continent, its formal Empire, and its informal interests in Africa, Asia and Latin America.

Although a variety of economic and social factors determined each volunteer's course of action at the turn of the century, the most widespread reason for enlistment in the Volunteer Service Companies and Imperial Yeomanry was "the need for psychological fulfillment in the expression of patriotism," says Miller, who examined volunteerism in the South African War, 1889-1902.

Reading the memoirs, diaries and letters of Militia, Volunteers and Imperial Yeomen, it's clear that recruits desired to experience something new, says Miller. For late-Victorian society, ambition and love of adventure were inherently linked to patriotism.

The response to the government's call for volunteers was greater than anyone expected. More than 130,000 British men chose to fight in the South African War as auxiliary troops. In addition, there were close to 350,000 Volunteers at home.

Here comes the sun

High gasoline prices and the country's dependence on foreign oil are prompting more people to take another look at alternative energy sources like solar. We asked University of Maine students on the Solar Vehicle Team for the best reasons to look to the sun.

Solar power is "green" — renewable, sustainable and clean.

Solar energy is free and readily available, even on the grayest of Maine days.

Solar panels installed in a home work even during power outages.

Advances in battery technology now make it easier and more efficient than ever to store solar energy.

Maine allows utility customers who generate their own electricity using alternative energy to sell the excess back to their power companies.

The Solar Black Bear, an '87 pickup converted to a solar-electric, zero-emissions vehicle, gets 3,000 miles "free" from the sun every year. The Solar Black Bear has been UMaine's entry in the Tour de Sol annually since 1999.

OLDER ADULTS and alcohol abuse

THE CENTER ON AGING at the University of Maine has begun a two-year study to determine the prevalence of binge and chronic drinking in people older than 65. It will explore what lifestyle or cultural factors contribute to it, and what can be done to influence those factors.

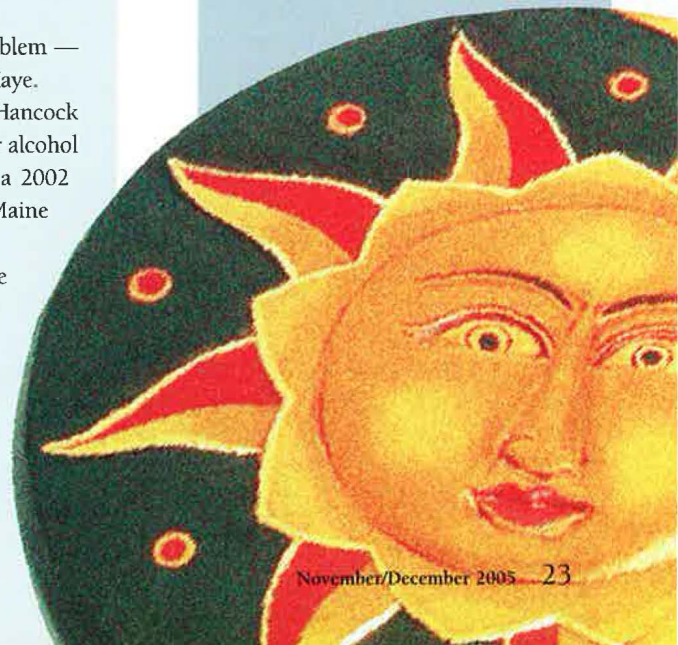
The study is funded by a \$30,000 grant from the Maine Department of Health and Human Services' Office of Substance Abuse.

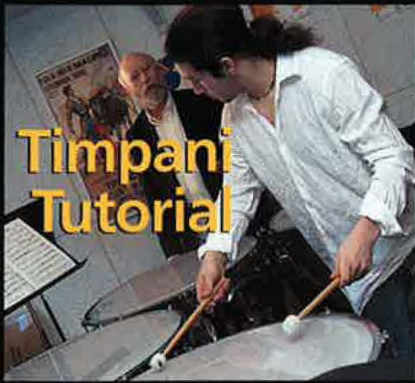
The project will investigate a very severe and neglected problem — alcohol abuse among older adults, says center Director Lenard Kaye.

The study will be statewide, but will focus especially on Hancock County, which has a disproportionately high percentage of older alcohol abusers compared to other regions of the state, according to a 2002 *Health Planning Report* for the Hancock region, by Eastern Maine Healthcare.

Heavy drinking, particularly when mixed with a multitude of prescription drugs many elders take for wellness, can lead to mental and physical health complications that may otherwise be avoidable.

Statistically, Maine has the largest percentage of older people of any state in the nation; it also ranks 14th in sales of spirits. Studies show that alcohol-related costs in Maine are approximately \$1 billion a year, according to Kaye, as reflected in the cost of treatment, traffic accidents, associated health problems and lost work time.





A NEW INSTRUCTIONAL DVD created at the University of Maine featuring Elliott Carter's *Eight Pieces for Four Timpani* will officially be released at the international convention of the Percussive Arts Society in November.

The interactive DVD tutorial developed by UMaine percussionist Stuart Marris is expected to be the first in a series focusing on important repertoire for classical instruments. It is only the second recording of the complete set of Carter's eight timpani pieces on the

The project could lead to a DVD series that a team of students could help turn into a new business venture, says Jake Ward, executive director of UMaine's Office of Research and Economic Development.

market, and the first interactive timpani DVD, according to Marris, who chairs the Music Division of the UMaine School of Performing Arts.

To complete the project, Marris collaborated with new media faculty and staff, and with UMaine's Office of Research and Economic Development. The project was filmed and recorded at the Maine Center for the Arts with four digital cameras.

Designed for music instructors and for students of timpani, or kettle drums, viewers can choose a camera angle and optional narrative in English, French or Spanish, in which Marris discusses his playing technique and the music, and how he achieves the complex rhythmic patterns and pitch changes in the music.

THIS FALL, an interdisciplinary course designed around the Pop!Tech 2005 conference in Camden, Maine, is exploring technology and society, and how they affect our ever-evolving cultures.

The online course, offered through the University of Maine Division of Lifelong Learning, is taught by a team of six faculty members. In October, it included a campus-based video link to the five-day conference.

Pop!Tech annually assembles some of the world's leading digital age thinkers, inventors, innovators and entertainers to wrestle with societal issues.



Illustration by Aaron Milligan

Pop!Tech

"As we shape technology, it, in turn, becomes a major force in shaping us."

Ken Nichols

For the past eight years, UMaine has been creating a

companion course to the conference.

"As we shape technology, it, in turn, becomes a major force in shaping us, our societies and civilization itself," says Associate Professor of Public Administration Ken Nichols, one of the faculty members co-teaching the course. "How does technology help us deal with — and also generate — unavoidable challenges in our futures? That's what this eccentric course is about."

The course is designed to consider the sea change happening around us and to explore its implications for our personal, professional, and civic lives.

Cross-cultural Management

A SURVEY OF MORE THAN 1,700 European business managers and employees found that while top management leadership strongly influences product and organizational innovation, its ultimate effectiveness is affected by the company's cultural sensitivity — or lack thereof.

The study reveals the importance of integrating leadership, sociocultural context and strategic innovation, according to Detelin Elenkov of the Stokely Management Center at the University of Tennessee and Ivan Manev of the Business School at the University of Maine, who published their survey results in the *Journal of Management*.

Elenkov and Manev compiled data from middle managers, and their supervisors, and those employees involved in innovation processes. They represented 270 businesses in 12 European countries. The survey, in English, was translated into seven other languages.

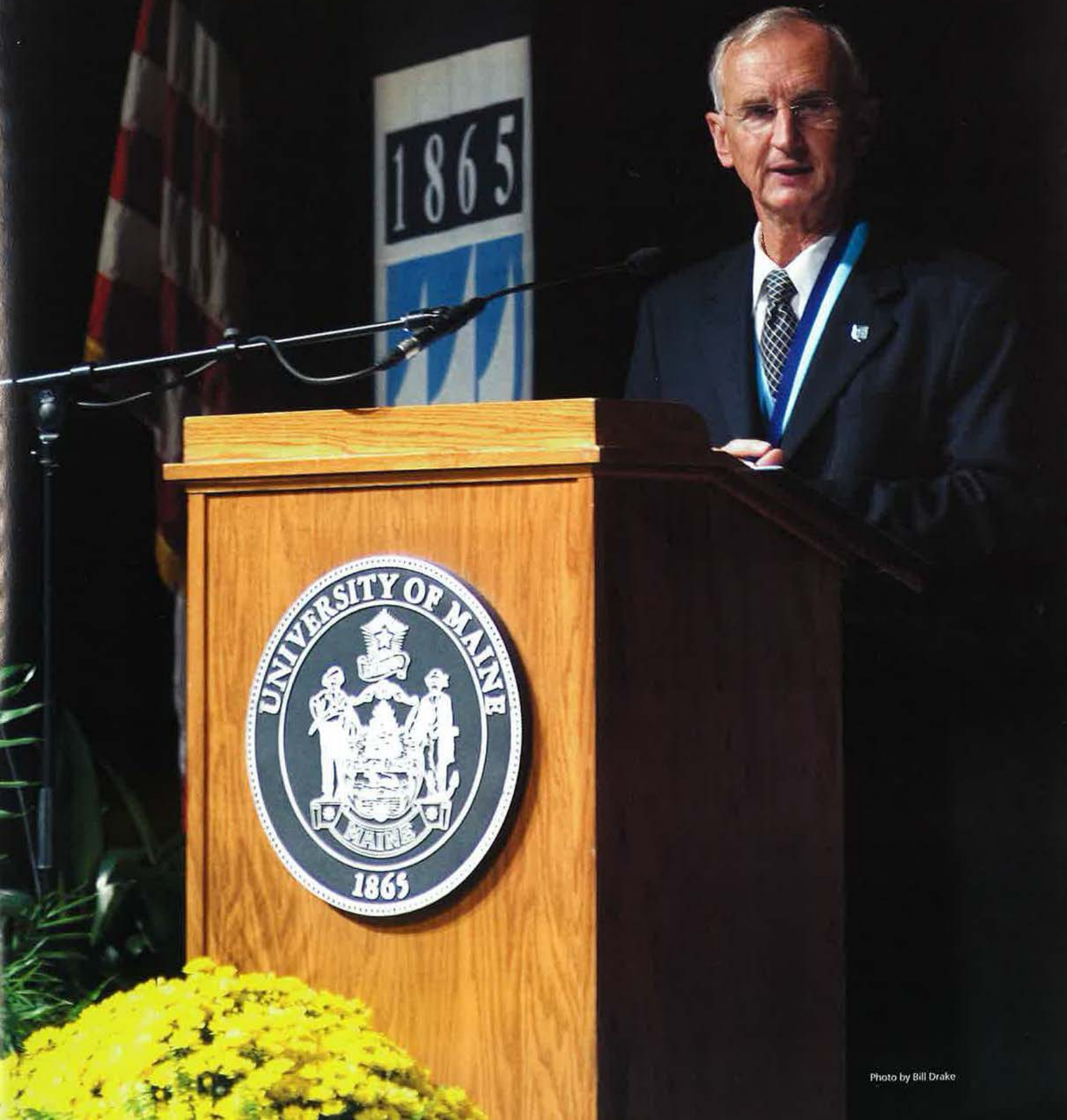
"Leadership behaviors (for management) may be effective or ineffective depending on the fit with the prevailing cultural values of the hosting society," write the researchers. "Our results provide guidance to managers about the general fit of leadership behaviors with sociocultural contexts, as well as the appropriate leadership behaviors for influencing organizational innovation in different cultures."

Elenkov and Manev suggest exploring effective leadership within a culture, rather than trying to identify universally effective or accepted attributes. They note that research on leadership, strategic innovation and social culture "has the potential to reveal many new ways to improve business practice in the 21st century."



lasting impression

September 23, 2005, Robert A. Kennedy was installed as the University of Maine's 18th president in a ceremony at the Maine Center for the Arts.



The University of Maine Foundation believes students are good investments — and investors. The proof is SPIFFY.

The Student Portfolio Investment Fund (SPIFFY) established by the foundation 12 years ago with \$200,000, and rewarded with infusions of \$150,000 and \$100,000 in subsequent years, has more than doubled its assets. Some of the students who serve as SPIFFY amateur money managers as undergraduates at UMaine go on to careers in financial management. Professor of Finance Robert Strong, SPIFFY's faculty adviser, is the 2005 Distinguished Maine Professor. An endowment fund newly established in the University of Maine Foundation proposes to underwrite SPIFFY's operating expenses.

This academic year, 35 students are involved in SPIFFY, meeting weekly to discuss management strategies, including the selection of equity and fixed-income investments, for the \$1.1 million fund. SPIFFY's student leaders annually travel to New York to meet with executives of investment

firms and to visit the New York Stock Exchange. At the Student Investment Fund Symposium held at the University of Dayton each spring, SPIFFY students consistently place high in competition.

SPIFFY reached a milestone almost a year ago when it crossed the million-dollar mark. In the past decade, SPIFFY students have produced returns of 11.9 percent. In the same period, the S&P 500 returned 8.8 percent.



A **SPIFFY** *investment*



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Photo by Bill D

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