

UMaine Today

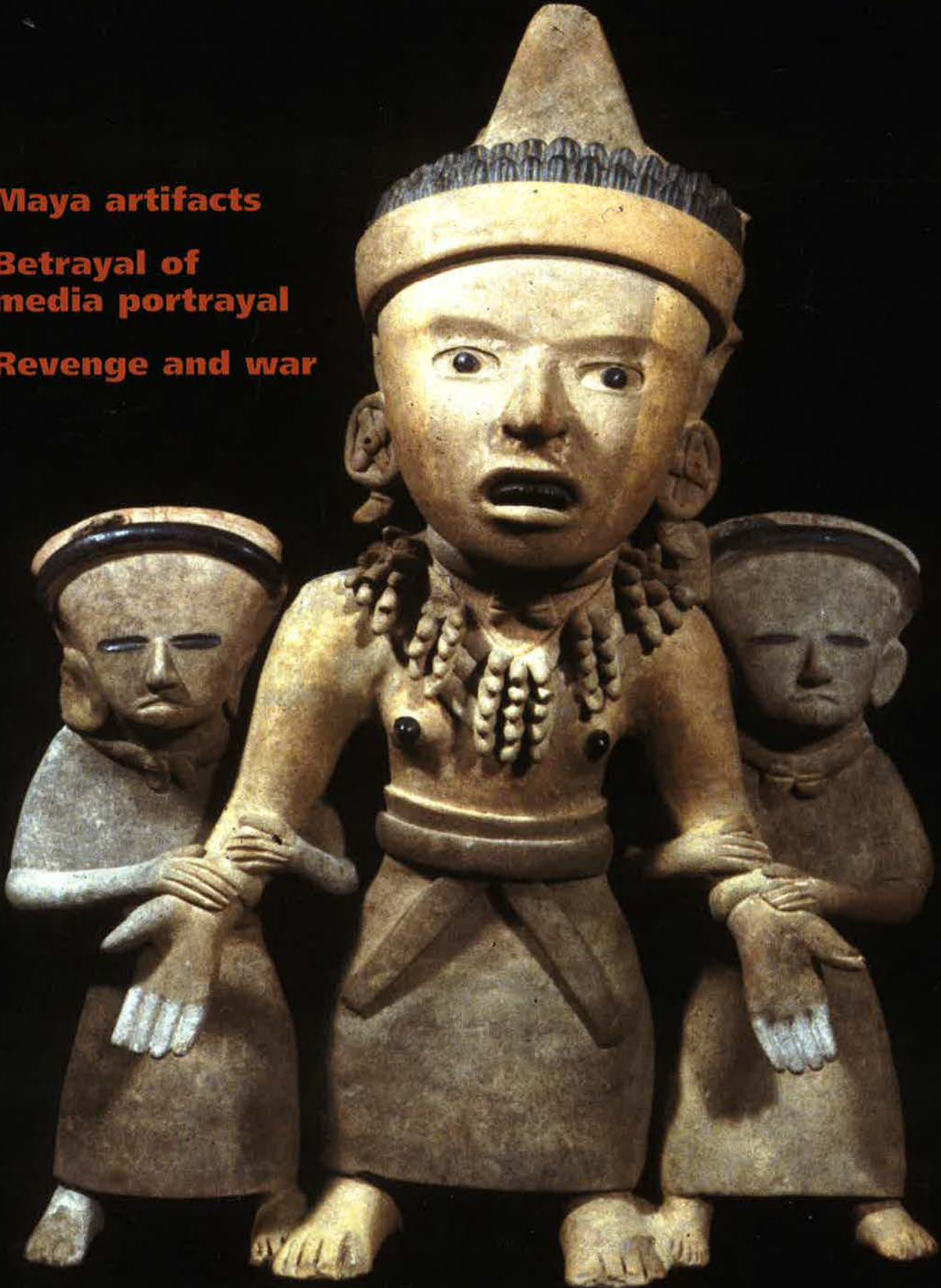
CREATIVITY AND ACHIEVEMENT AT THE UNIVERSITY OF MAINE

MAY/JUNE 2003

Maya artifacts

**Betrayal of
media portrayal**

Revenge and war



From the President

THIS TIME OF YEAR at the University of Maine, we look forward to warm-weather outdoor activities, commencement in May, and another glorious Maine summer. People of all ages, from Maine and beyond, will arrive to take part in Summer Session classes, conferences, music and sports camps, and other educational activities for which a campus such as ours is ideally suited.

Our faculty members will be a major part of campus life this summer, actively involved in the teaching, research, and engagement that defines their year-round professional lives and helps our constituents to extend their knowledge in important areas. In addition, some faculty members will take their cutting-edge research to exotic locales during the summer months.

For instance, UMaine anthropologists Douglas and Rebecca Bird will be in Australia, conducting ecological surveys as they explore hypotheses related to Aboriginal peoples, land management techniques, and biodiversity. They also will look at age-linked foraging strategies among the people of that fascinating culture. Karl Kreutz from our geological sciences and Quaternary studies faculty will continue his work in Alaska's St. Elias Mountains, collecting ice cores that will help to further the understanding of North American climate change. Countless other professors, often working with UMaine students, will use the summer to collect and/or analyze information related to their research.

At the same time, UMaine will welcome students and researchers from throughout the U.S. and around the world. An example is the national and international marine scientists who will use the Darling Marine Center in Walpole, Maine, as a home base from which to conduct research related to the ocean and the Gulf of Maine.

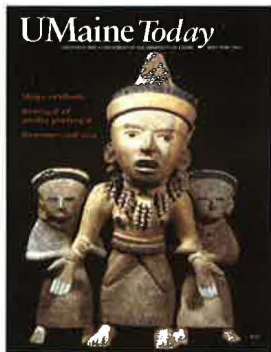
The sheer number of people who will take advantage of what we have to offer is impressive. Through our Division of Lifelong Learning, 500 courses will serve more than 6,000 students. Additionally, we estimate that some 11,000 people will spend part of their summer at UMaine, participating in one or more of the approximately 55 conferences, institutes, and camps that are scheduled. Among that group will be some 1,500 K-12 educators attending the variety of summer institutes and workshops sponsored by the College of Education and Human Development.

At UMaine, we welcome this active time of year. It is part of the university's unique, important, and dynamic role in this state.



Photo by Toby Hollis

Peter S. Hoff
President



ON THE COVER: A ceramic figure painted with natural asphalt from Veracruz, Mexico, from the Early Classic Period (A.D. 200–500), is one of the more than 2,800 Precolumbian artifacts in the William P. Palmer III Collection in the Hudson Museum at the University of Maine. The Palmer Collection is among the largest and most important in the United States. It provides new and valuable insights into how such spectacular ceramic figurines were made, who made them and how they were used. (Story on page 12.)

Photo courtesy of the University of Maine Hudson Museum



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UMaine Today is produced six times a year by the Department of Public Affairs, University of Maine, 5761 Howard A. Keyo Public Affairs Building, Orono, Maine 04469-5761, 207-581-3744.

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Printing and distribution of *UMaine Today* is underwritten by the University of Maine Foundation.

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2 Revenge as a Motive for War
 Humans are the only animals that enter conflicts seeking an eye for an eye. Indeed, lethal revenge is not a useful evolutionary adaptation, argues University of Maine anthropologist Paul Roscoe. While revenge as a motive for war can be found throughout history, in today's thermonuclear age the result can be annihilation.

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 In a required course for physical education majors, UMaine students and persons with special needs learn from each other. The lessons aren't always easy, but the results, including greater appreciation for people's strengths and capabilities, can last a lifetime.

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 Food scientists in UMaine laboratories are developing new products to benefit Maine's natural resource industries. Whether researching the use of blueberries to preserve flavor in frozen burger patties or experimenting with leftover crabmeat in new snack foods, the results have potential economic value.

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 The Maya had one of the most sophisticated civilizations in the ancient world. Today, the University of Maine's Hudson Museum provides a glimpse into that world through its Palmer Collection of West Mexican figurines, considered to be one of the most important in the United States.

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 Today's technology has opened the lines of global communication, but the messages aren't always clear. In fact, they can be downright misleading, resulting in cultural misunderstanding, says broadcast journalism associate professor Lyombe Eko.

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 UMaine research may one day lead to lighter, faster naval ships built with advanced composite hulls. Engineers are studying the strength of composite hull panels made of fiberglass infused with resin.



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Illustration courtesy of Navatek Ltd.

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RESEARCH BY A UMAINE ANTHROPOLOGIST FINDS
EYE-FOR-AN-EYE KILLING IS STRICTLY HUMAN
AND OFF THE USUAL EVOLUTIONARY PATH

REVENGE AS A MOTIVE FOR WAR

TODAY, OUR MEANS OF KILLING ONE ANOTHER

are more sophisticated than ever, but the reasons we fight are pretty rudimentary. Humans have thermonuclear technology, but still only possess Stone Age brains — a potentially lethal combination, according to University of Maine anthropologist Paul Roscoe.

For more than two decades, Roscoe has studied revenge as a motive for war among tribes in New Guinea. His research shows that lethal revenge most frequently fuels more death than it deters, to the point that killing enemies to avenge the death of kin — something only humans do — is probably not a useful evolutionary adaptation, says the professor of anthropology and cooperating professor of Quaternary and climate studies at UMaine.

By engaging in revenge killings and warfare, humans have strayed rather far off the evolutionary path followed by most other species. The technical ability of humans to harm one another has outpaced the social and cultural abilities needed to deal with this unwise behavior, Roscoe surmises. Only in the last 10,000 years of human existence have people evolved from hunters and gatherers with spears to glorified hunters and gatherers with thermonuclear weapons.

“We may have thermonuclear technology, but we still have Stone Age brains,” Roscoe says. “Our social and political systems are slow to adapt in comparison to the pace of technological development. To make matters worse, even when we sometimes manage to catch up, technology has by then advanced further and the goalposts have shifted.”

Evolutionarily speaking, it does not make sense to engage in behavior that may not only kill you, but also members of your clan or tribe.

Illustration by Stephanie Carter





Writ large in a nuclear exchange, revenge killing could theoretically wipe out your entire species. It makes evolutionary sense to fight and then back off, says Roscoe.

For example, male red deer competing for territory or mates first roar at one another. If neither backs away, the animals then pace side by side, sizing up each other. If this fails to resolve the conflict, the two animals may fight, but the results are typically not lethal.

PREVIOUS THEORIES ON MOTIVES FOR REVENGE

focused on an escalating tit-for-tat complex, in which humans simply take behavior routinely practiced by other animals to the next step. Many animal species engage in escalating aggressive behavior. Humans are the only animals to seek out enemies and kill them for past actions.

Taking a different approach, Roscoe argues that this is because humans have a large, highly developed neocortex, the region of the brain responsible for intellectual thought and creativity. The neocortex is believed to have evolved for positive purposes, such as enabling humans to develop tools, communicate through language, and plan cooperative hunting trips. But history shows it has not always been used for positive pursuits, says Roscoe, who presented his theory and research earlier this year at the prestigious annual meeting of the American Association for the Advancement of Science in Denver, Colo.

“Humans developed the ability to model actions before they happen. This means we can plan collective violence. It explains why we have warfare,” he says. Research on chimps confirms that, once you can gang up and launch a surprise attack on outnumbered victims, killing becomes a dramatically more attractive option than it is in the one-on-one confrontations typical of other species.

The development of human intelligence gives our species greater ability to use violence and killing as a tool to achieve various ends — to further an ideology, eradicate an ethnic group, keep borders secure. Humans also use their intellect to develop sophisticated weapons that make killing more efficient while avoiding face-to-face conflict, thereby circumventing our inbred aversion to killing others of our species.

The neocortex also allows humans to manipulate their emotional states and dehumanize enemies for the same purpose. For instance, warriors can whip themselves into an angered frenzy by recalling slain kin and engaging in repetitive, militaristic chants. Many tribes in New Guinea refer to their enemies as “our game,” and world leaders have equated their enemies to mad dogs and rats.

Roscoe’s research focuses on the little-studied wars waged by tribes in New Guinea, many of which did not have contact with outsiders until the 1930s. The island presents a potential treasure trove of information on warfare because, at the time of contact, there were thousands of groups that spoke more than 1,000 languages. They often were at war with one another until well into the 20th century.

Roscoe first lived among the Yangoru Boiken people for a year and a half in the early 1980s and has returned there three times. His early research was on the need for family planning among the people living in the foothills of a coastal mountain range in the north of the South Pacific island. While there, he also did general ethnographic studies, which informed his current work.

Like early white visitors to the island, Roscoe was viewed as a spirit of the dead. Locals thought he was a reincarnated ancestor, a responsibility Roscoe did not take lightly. He provided anti-malarial drugs and other medical assistance to residents and, in exchange, had a window on their world.

The Yangoru Boiken use sorcery to explain many events, including illness and crop failures. Sorcery also played a role in the island’s warfare; clans fought to avenge deaths caused by spells.

“I had the gut recognition that we would do the same thing if we were in their circumstances. New Guineans are the same as us; they just don’t have the complex technology and political structure that we have,” Roscoe says.

Major tribal warfare in New Guinea ended nearly six decades ago, so in recent years, Roscoe has traveled to archives around the world to collect data about warfare in contact-era New Guinea. Roscoe studied the writings of missionaries and explorers, many of them German and Dutch, who visited the South Pacific island before most anthropologists arrived.

He found that much of the warfare in New Guinea was, in fact, precipitated by revenge; the motive was to weaken the enemy and forestall further aggression. Some tribes believed they must fight until there was an equal number of dead on both sides. Others believed they must inflict lethal revenge to be spared attacks from the ghosts of clansmen killed in prior conflicts. Fighting often escalated, sometimes involving groups not party to the initial clash, and continued for generations.

“My hope is that somewhere down the road, we will use this knowledge to get around killing one another. We need to figure out why we have war before it wipes us off the planet,” Roscoe says.



Photo by Toby Hollis

“Humans developed the ability to model actions before they happen. This means we can plan collective violence. It explains why we have warfare.”

Paul Roscoe

Susan Young

Ability Awareness

Students and people with special needs get lessons that last a lifetime in an adapted physical education course

THE FIELD HOUSE is abuzz with noontime activity. A pickup game of basketball is in progress. Joggers warm up for their runs and walkers take another lap on the indoor track.

At one end of the facility, children congregate around a jumble of play equipment — plastic bats, tennis rackets, orange cones, hockey sticks, foam shapes, and balls of all sizes and colors.

Eleven-year-old Josh and University of Maine junior Jarrod Gomes retrieve a basketball and head for one of the hoops to start this week's series of motor skill development activities.

For the next two hours, it's as if Josh and Jarrod are the only two in the place.

For the past 18 years, Professor of Education Steve Butterfield has taught this one-semester course required for all UMaine physical education majors. The University of Maine uses a living-laboratory model that brings persons with disabilities to campus to work with students.

Josh is dribbling and shooting the ball, barely able to contain his excitement. No matter how many times he misses the basket or lets the ball get away from him, Jarrod is there with encouragement and quick lessons on how to hold and move the ball differently. After

several failed attempts at sinking a basket, Josh is told to try hitting the backboard. The youngster dribbles on the run with Jarrod playing defense. At one point, Jarrod drags over a plastic basketball hoop, half the size of the regulation basket, and Josh succeeds in dunking the ball.

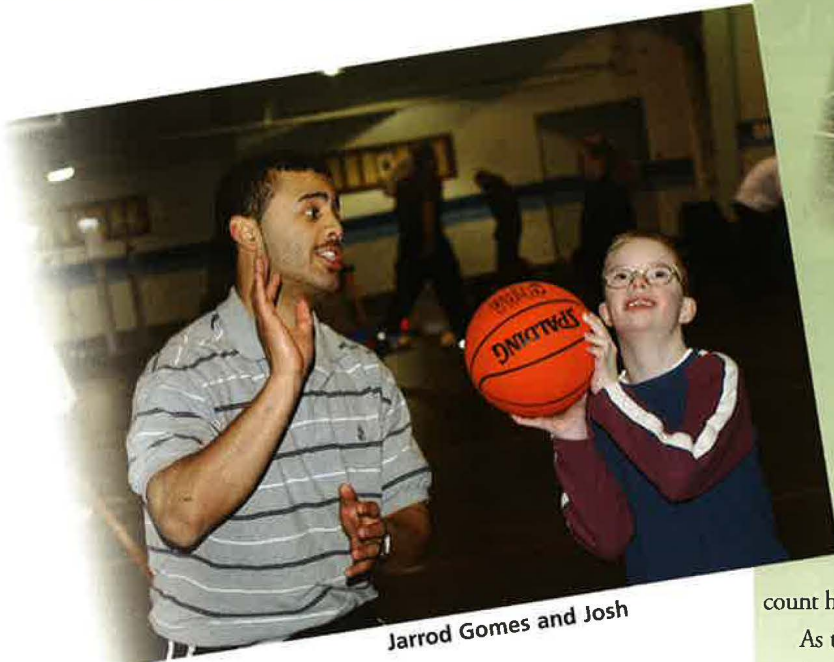


Marie Gratton and Kyle (above); Jay (photo upper right)

Photos by Toby Hollis



Ability Awareness



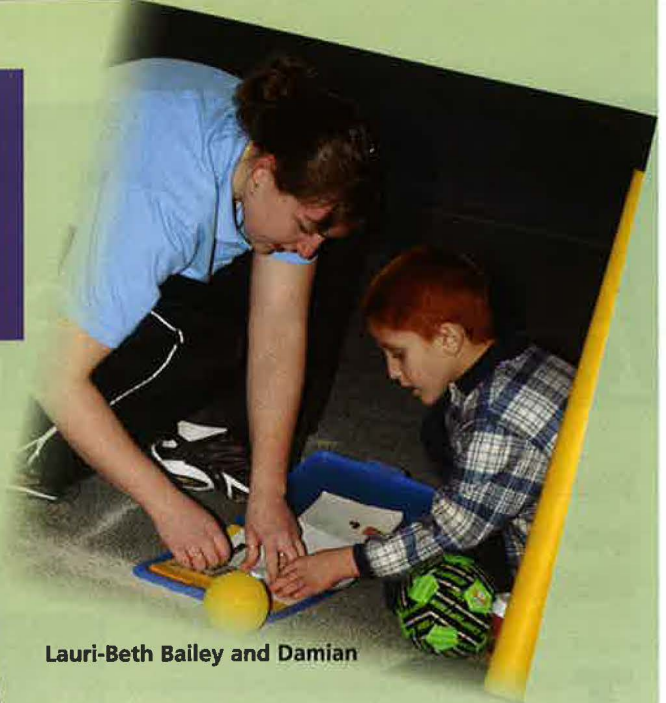
Jarrod Gomes and Josh



Nolan Tobey and Peter

“Good job. You’re going to get it. Let’s try that one again,” says Jarrod, giving Josh a high five before they move on to the next activity, floor hockey.

Jarrod is one of 30 UMaine students enrolled in an undergraduate class called Mainstreaming in Physical Education, working one-on-one with adults and youngsters like Josh who have mental and/or physical disabilities. Typically juniors and seniors, most of the UMaine students have little or no experience interacting with persons with mild to profound disabilities. As a result, the class becomes a learning experience for both the UMaine students and their partners with special needs.



Lauri-Beth Bailey and Damian

The lessons aren’t always easy.

“Remember last week, you showed me how you can catch?” says Professor of Education Steve Butterfield to a little girl who refuses to go on with her activity. “You caught five in a row.”

The child steps up to the line on the floor to try again. “Hands ready,” Butterfield says, crouching next to the girl to count her successful catches and to watch her kick the ball back.

As the youngster basks in her success, Butterfield turns his attention to the frustrated UMaine student. “That was knee action, but no follow-through,” he says, referring to the motor skills level the child exhibited. “What level was that? OK, you’re in charge. Try a little positive reinforcement.”

For the past 18 years, Butterfield has taught this one-semester course required for all UMaine physical education majors. The University of Maine uses a living-laboratory model that brings persons with disabilities to campus to work with students. The youngsters in the program come from area schools; the adults from the Multiple Handicap Center of Penobscot Valley in Bangor, Maine.

The class, part of the kinesiology and physical education program in the College of Education and Human Development, meets three times a week. It begins with an overview and history of teaching sports and physical education for persons with disabilities. Mock labs are held in which the students are blindfolded or use wheelchairs to better understand physical disabilities.

For the remaining 10 weeks, Wednesday classes become the developmental motor and aquatics lab in the Field House.

“They get a lot of the activities that we’re not able to do, like using the (Latti Fitness Center) and pool,” says Jeff Bosse of the six adults he accompanies from the Multiple Handicap Center, part of Amicus. “They all come back with big smiles on their faces. They have a sense of belonging.”

For 11-year-old Josh, coming to UMaine is a highlight of his week. “Often he does his (school) work because he knows he’s going to the



Calvin with Raffaella Wolf



Amy



Kyle with Trevor Hairston

program. It's great incentive," says education technician Jan Bennett from Herbert Sargent School in Stillwater, Maine. "He's very well coordinated and involved in a lot of recreational sports. I can see that this (program) played a big part in it."

The UMaine students take a dynamic systems approach by modifying the task and/or environment to meet special needs and achieve physical education objectives. Students observe and problem-solve to help the person with disabilities become more skilled and independent. Most often, the changes are incremental.

"They don't see miracles," Butterfield says. "They understand we're not in the business of curing people. But while the students may see a little development in the people they're working with during the semester, I see many changes over the years."

Joella Michaud of Brewer speaks passionately about the difference the developmental motor and aquatics lab has made in the life of her son Calvin, 9, who's been coming to the UMaine program for five years.

"At first he didn't like to get his face wet. Now he swims down and back (the length of the pool). There's been such growth," says Michaud. "The program focuses not so much on what the kids can't do but what they can. Calvin used to be a child who couldn't make a mistake. Now he's not afraid to try."

Senior Raffaella Wolf, Calvin's partner last fall, remembers her nervousness during the first couple lab periods. "I had no previous experience working with individuals with disabilities, but I also knew that I could master the challenge with focus, hard work, dedication and determination," says the kinesiology and physical education major, and member of the UMaine women's ice hockey team. "After the first couple labs, I was really enjoying the class.

"In our profession, we should be prepared to work with any individual. It can be a very rewarding experience working with someone who has a disability."

Butterfield likens the developmental motor and aquatics lab to basic training. "Students in the class go through five stages of adapting to the experience," he says. "The first stage is fear, which almost immediately moves to stage two: anger at me for giving them this difficult assignment. Soon the students feel more competent, self-confident and creative, planning more adventurous, yet still developmentally appropriate activities, such as dancing and even swimming in the deep end of the pool.

"At stage five, there's ownership," says Butterfield. "Next semester, they'll be the ones sticking their heads in the door to see who's working with 'their' partners." Some of them also volunteer to help evaluate their peers in the next class.

"I honestly have never learned so much. I found the experience to be one that really shaped my academic career."

Brandy Walsh



That's not to say that every UMaine student reaches stage five. By semester's end, there can be one or two students who are "still not there," admits Butterfield. But they have a good start toward feeling confident and capable when working with persons with disabilities.

Over the years, some students have gone on to receive teaching certification in adapted physical education. Others take the lessons learned into their classrooms and communities, becoming advocates for the rights and needs of persons with disabilities.

"This class went far beyond my expectations," says Brandy Walsh, an elementary education major. "I honestly have never learned so much. I found the experience to be one that really shaped my academic career. I hope I can impact children's lives in the same way both Professor Butterfield and this class impacted mine."

Margaret Nagle

Waiter! There's a blueberry in

UMaine food scientists develop products with the potential to benefit businesses and consumers

FOR SOME PEOPLE, a combination of leftover crabmeat and pasta is dinner tonight. For food scientist Denise Skonberg, it's a potential new product waiting to be developed.

Skonberg's lab has created several varieties of crab-flavored pasta in recent years. They're only a few of the many products, most based on traditional Maine foods, that have come out of University of Maine food science laboratories.

But this is no recipe contest. Scientists like Skonberg see a need — a business that wants to expand its market with a new product, a natural resource that is underutilized or wasted, consumer demand for healthier foods — and head to the laboratory to create foods for the future. Their experiments in food science incorporate biology, chemistry, microbiology and even a dash of engineering.

After months or years of research to develop a product, the ultimate judge is still the human palate. Skonberg and her colleagues depend on volunteers to taste test their creations. Every new variety of boiled potato, seafood-based snack food or cranberry muffin has to have the right flavor, texture and appearance, among many other characteristics, to succeed in the market.

UMaine's food scientists are working with the state's natural resource-based industries — seafood, blueberry, potato, apple and others — to develop new products to boost revenues and create jobs. As scientists at Maine's land-grant university, they know that helping Maine's food producers is their top priority.

"Economic growth in Maine's modern agriculture industry cannot occur without food product development research," says Rod Bushway, chair of the UMaine Department

of Food Science and Human Nutrition, and a researcher nationally recognized for his work on pesticide residue analysis on fruits and vegetables. "The days are over when production agriculture is the lone factor in growth. Unless you are changing the raw commodity into value-added products, you're missing the biggest potential for economic development and growth that agriculture can contribute to a state's economy."

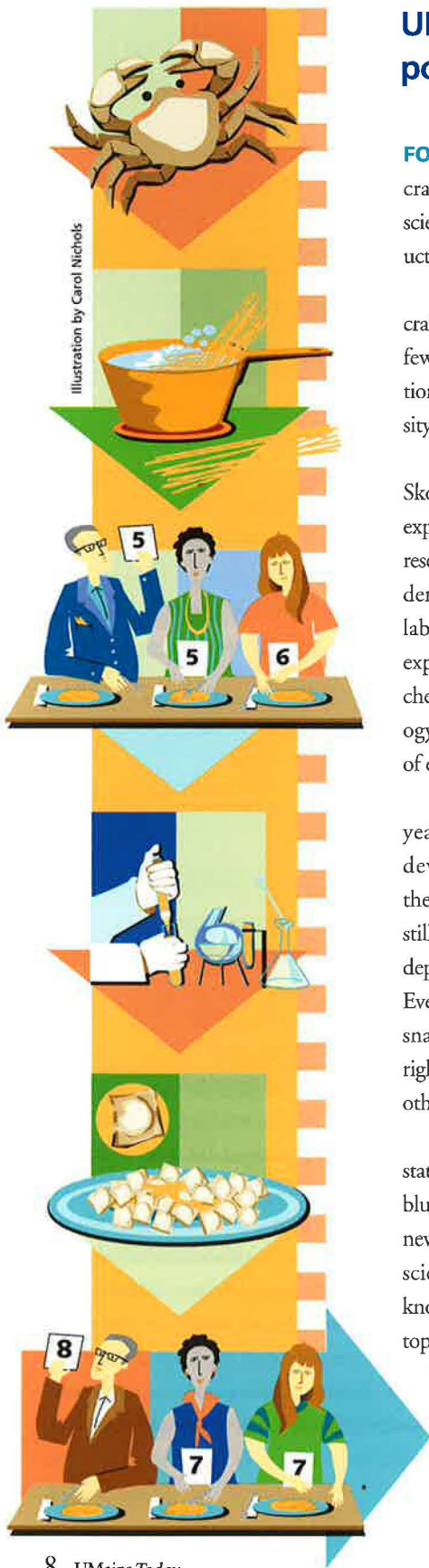
SEAFOOD-BASED PASTA is just one of the new products in development in UMaine's Department of Food Science and Human Nutrition. It started with an idea: crab linguini. Skonberg and her students used minced crab — the meat usually left on the shells after processing — to make a paste.

They evaluated the paste for its nutritional and chemical characteristics, and did microbial analyses to determine its fresh or frozen shelf life. After a year of experiments and

tests, the crab minc , which is high in protein, was used as an ingredient to make pasta.

But when taste tested, the linguini didn't get rave reviews from the consumers. Their verdict: not much crab flavor. "They indicated there was nothing exciting about it," says Skonberg, UMaine associate professor of food science and human nutrition. "While we had developed a protein-enriched product with the shelf life of a month (fresh, not frozen), it was not a gourmet, seafood-tasting pasta."

It was back to the laboratory for the pasta — a common reality for any food scientist. Yet even research that doesn't directly lead to commercialization has value. Research results are published and presented at conferences. And they serve as springboards for developing other new products.



my burger!

"When we found we couldn't put crab in pasta, we decided we could use the same amount of mince and wrap it in pasta," says Skonberg. "That's when we decided to try stuffed ravioli."

Skonberg and her colleagues worked with Cal Hancock of Hancock Gourmet Lobster Co., in Cundy's Harbor, Maine, to develop the product. In 2001, Hancock received a \$10,000 seed grant from the Maine Technology Institute to develop new lobster and crab pasta products. The ravioli research took 10 months.

To meet the gourmet standards required by Hancock, the food scientists developed fresh and frozen ravioli made with crab mince and chunks of lobster. From two sensory panels, the ravioli received a rating of 7.5 out of 9 (liked very much). Skonberg will present findings from her seafood-based ravioli research at the Trans Atlantic Fisheries Technology Conference this June in Iceland.

"The sensory testing was quite positive and we are pleased by that," says Hancock, owner and president of Hancock Gourmet Lobster Co., a retail/mail-order business marketing specialty food primarily made out of lobster.

"Lobster ravioli is a fairly common product and there are other companies that make lobster ravioli," says Hancock. "We may want to develop a 'unique' lobster pasta product using similar ingredients, but just making it a little bit different (i.e., a large, single-serving ravioli or one made into a different shape)."

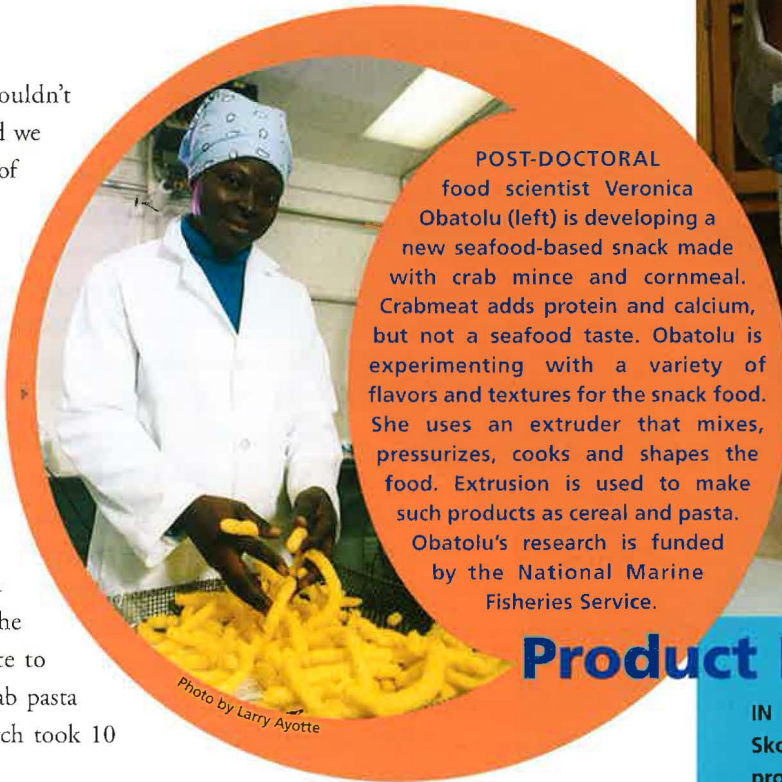


Photo by Larry Ayotte

POST-DOCTORAL
food scientist Veronica Obatolu (left) is developing a new seafood-based snack made with crab mince and cornmeal. Crabmeat adds protein and calcium, but not a seafood taste. Obatolu is experimenting with a variety of flavors and textures for the snack food. She uses an extruder that mixes, pressurizes, cooks and shapes the food. Extrusion is used to make such products as cereal and pasta. Obatolu's research is funded by the National Marine Fisheries Service.



Photo by Toby Hollis

Product Potential

IN HER RESEARCH, food scientist Denise Skonberg (above) studies how to use by-products of crustacean processing, like the bits of crabmeat left on the shells. She and the graduate students who work with her have used crab mince to create new products, such as seafood-based pasta and ravioli. Currently in her laboratory, Skonberg is studying the product quality of frozen salmon patties. Over a three-month period, the researchers are conducting lipid oxidation studies on the fish. Undesirable flavors often result from the oxidation of lipid compounds, ultimately shortening shelf life. However, the addition of natural antioxidants like those found in blueberries or spice extracts can protect the flavor of frozen fish. In the near future, Skonberg's product development research will focus on breaded crab nuggets (like chicken nuggets) made with crab mince. This and all the other seafood products are being developed at UMaine in cooperation with the university's Lobster Institute, whose research and educational outreach focuses on protecting, conserving and enhancing lobsters and lobstering as an industry.

NEW PRODUCT DEVELOPMENT starts with an understanding of what people will consume, says Professor of Food Science Mary Ellen Camire. That's why sensory evaluation is so important. Despite today's technological advances, there's still no substitute for taste tests.

The University of Maine is the only institution in New England and the Maritimes — and one of only 15 nationwide — that offers a formal sensory evaluation program. The state-of-the-art sensory evaluation lab has a new home in a food research pilot plant, which includes a commercial kitchen used by both human nutrition and food science researchers. The Department of Food Science and Human Nutrition recently relocated to Hitchner Hall, with its new \$12 million science wing and pilot plant, financed largely by a research and development bond referendum in 1998. The U.S. Department of Agriculture also provided



Healthy Tastes

GRADUATE STUDENT Yean Hoong Teh (left) and Professor of Food Science and Human Nutrition Mary Ellen Camire are studying consumer attitudes to better understand the trade-offs between taste and nutrition. Their strategy is to develop a heart-healthy frozen dessert and conduct consumer taste tests. A sensory panel in UMaine's Consumer Testing Center will rate the new product for flavor and other characteristics; then the taste testers will be told the health

benefits before again sampling and ranking the dessert. Teh and Camire have created a frozen product with a soy center covered in pureed blueberries. It is high in heart-healthy nutrition, and low in sugar and fat. The food scientists want to know if consumers' attitudes toward the product will change once they know it may reduce their risk of heart disease.

Similar studies by Camire have shown that consumers are willing to tolerate a product that is less sweet if it means the health benefits are greater.

\$545,000 in a facilities grant.

In the sensory evaluation lab, food scientists compile complex statistical data to help industry make predictions about the validity of new products. Sensory tests to rate a product's flavor, aroma, texture and other characteristics also are instrumental when investigating the trade-offs consumers are willing to make in the name of better nutrition.

Take cranberry juice cocktail. Most brands contain 27 percent cranberry juice, which is high in cancer-fighting antioxidants. Consumers seeking the benefits of antioxidants are more likely to buy a product with a higher percentage of juice, but are they willing to give up on taste?

Women in sensory tests preferred the taste of cranberry juice cocktail containing up to 34 percent juice, says Camire. However, once they were given information on the health benefits of cranberries, the women reported that they liked the cocktail with 41 percent juice, even if it was more tart.

"There are reasons why we can't have certain products," Camire says. "For instance, the inability to add more raspberries in a cereal is not because of technological or price prob-

lems, but because of sensory acceptability.

Sensory tests can tell us that most appealing balance."

Two decades ago, the food industry was all about "taste and looks. Health didn't sell. People like sugar and fat," says Camire, a science communicator for the Institute of Food Technologists. "Timing — when consumers are ready for something new — is very important."

NEW VALUE-ADDED FOODS are

important economic development initiatives. For instance, in her seafood-based pasta research, Skonberg uses both rock and Jonah crabs, which are the by-catch of lobster harvesting. In addition, crab is an underutilized natural resource when it is processed. Much of Maine's fresh crabmeat comes from licensed home-based food processing businesses, where only about 10 percent of the steamed

crabs' body weight is picked by hand. In the UMaine laboratory using a meat-bone separator, Skonberg found that 45 percent of the remaining meat could be harvested for mince.

Ideas for seafood-based products like pasta came in a collaboration with Robert Bayer, director of the Lobster Institute at the university. Maine's crab processing industry funded the initial pasta research.

In fisheries or any other natural resource-based industry, it's critical to go beyond sales of fresh products and look at frozen, value-added and processed alternatives. With the support of the Lobster Institute, UMaine food scientists did just that in 1999 by patenting a new process to preserve the flavor and texture of frozen seafood, particularly lobster.

"Ability to sell frozen lobster and crab that maintain the texture and natural flavor of fresh seafood gives the industry another option," says Alfred Bushway, a professor of food science involved in the patent research. "The frozen product will not have as much of an impact in

Lobster to Go

UMAINE PATENTED

a process that preserves the texture and flavor of frozen seafood, like lobsters. The crustaceans are injected with natural sugar-based compounds and antioxidants before cryogenic freezing (fast-freezing using sprayed liquid gases). The process has opened global markets for Maine's lobster industry by providing a frozen product that tastes as good and as fresh, and has a longer shelf life. Reducing seafood spoilage also protects public health and conserves the natural resource. The patent is based on research by the Department of Food Science and Human Nutrition, and the Lobster Institute.



Space Food

FOOD SCIENTISTS graduating from the University of Maine have jobs in Maine businesses and with such national corporations as Kellogg Co., McCormick and Co., Inc., Tyson Foods Inc., Campbell Soup Co., Dannon Co., Inc., and Cabot Creamery Cooperative.

Undergraduates in both food science and human nutrition gain hands-on experience through research in UMaine food science laboratories and through internships. Junior Mark Corey (pictured below) is one of them.

Corey, who is pursuing a career in product development, has an internship this summer at NASA's Johnson Space Center in Houston, Texas.

The student from Weare, N.H., has been selected to participate in NASA's Undergraduate Student Research Program, which provides college students nationwide mentored research experiences at several NASA Field Centers.

"It will be a lot of work but an incredible opportunity," says Corey. "It's the chance of a lifetime for a college student."

Johnson Space Center focuses on the technology that supports human operations in space. In his 10-week internship, Corey will work on the food product development team that researches products astronauts may one day use.

For the past two years, he has assisted in the laboratory of Associate Professor of Food Science and Human Nutrition Denise Skonberg.

Corey is president of UMaine's Food Science Club; vice president of the university's chapter of Kappa Omicron Nu, the national honor society for family and consumer sciences; and secretary-treasurer of the local chapter of the National Society of Collegiate Scholars. When he graduates from UMaine next year, he will be headed to graduate school.

Maine, where fresh lobster is readily available, as it will in other parts of the country, where there are significant losses with live lobsters."

Other milestones in UMaine product development: the "invention" of the blueberry raisin; studies of new apple varieties; research on potatoes to improve frying, baking, boiling and processing quality; seafood-based snack foods using calcium- and protein-rich crab; blueberry and cranberry burgers to take advantage of the natural antioxidant properties of the fruit to help preserve fresh flavor in frozen patties; high-fiber flour made from potato peels that can be added to muffins, cookies, breakfast cereals and other foods; antioxidant-rich blueberry puree as an oil substitute in baked goods; and salmon pepperoni and sausage.

The latter, using trim from fresh or smoked salmon, was based on research by Al Bushway and UMaine aquaculture major Doug Ewart in the early 1990s. Salmon sausage was already on the market, but its quality was poor because of the lipid oxidation in the fish, which is high in saturated fat. The researchers worked with Maine's salmon industry to find naturally occurring preservatives such as spice extracts to prevent oxidation and increase shelf life.

When Ewart graduated, he and his wife, Cheryl, also a UMaine alum, launched Out of the Blue, a company in Waldoboro, Maine, that still makes salmon sausage.

"It's exciting to see a student with entrepreneurial background take a concept and run with it," says Al Bushway. "We're always working with new and existing Maine companies as they find their niche in the market."

Margaret Nagle

Tater Tests

MAINE POTATO FARMERS have a new variety of spud available for planting this spring as a result of research by the University of Maine and Cornell University.

The new potato called Monticello is particularly useful for farmers who sell to potato chip processors, says Gregory Porter, professor of agronomy at UMaine.

"There are few varieties that can be held in long-term storage and still produce a good quality chipping potato. This variety does that. It also has a good appearance and will do well in the market for fresh potatoes," says Porter.

Monticello was developed by plant breeders at Cornell and has been field tested in Maine since 1996.

Consumer tests, conducted by the UMaine Department of Food Science and Human Nutrition, showed that in addition to having an appealing appearance, Monticello did well when boiled and baked.



Photo by Toby Hollis

Before Columbus

UMaine's world-renowned collection of Maya artifacts provides clues about one of the most complex civilizations in the ancient world



Ceramic "pretty lady" figurine. Michoacán, Mexico. Late Preclassic–Early Classic (200 B.C.– A.D. 500).

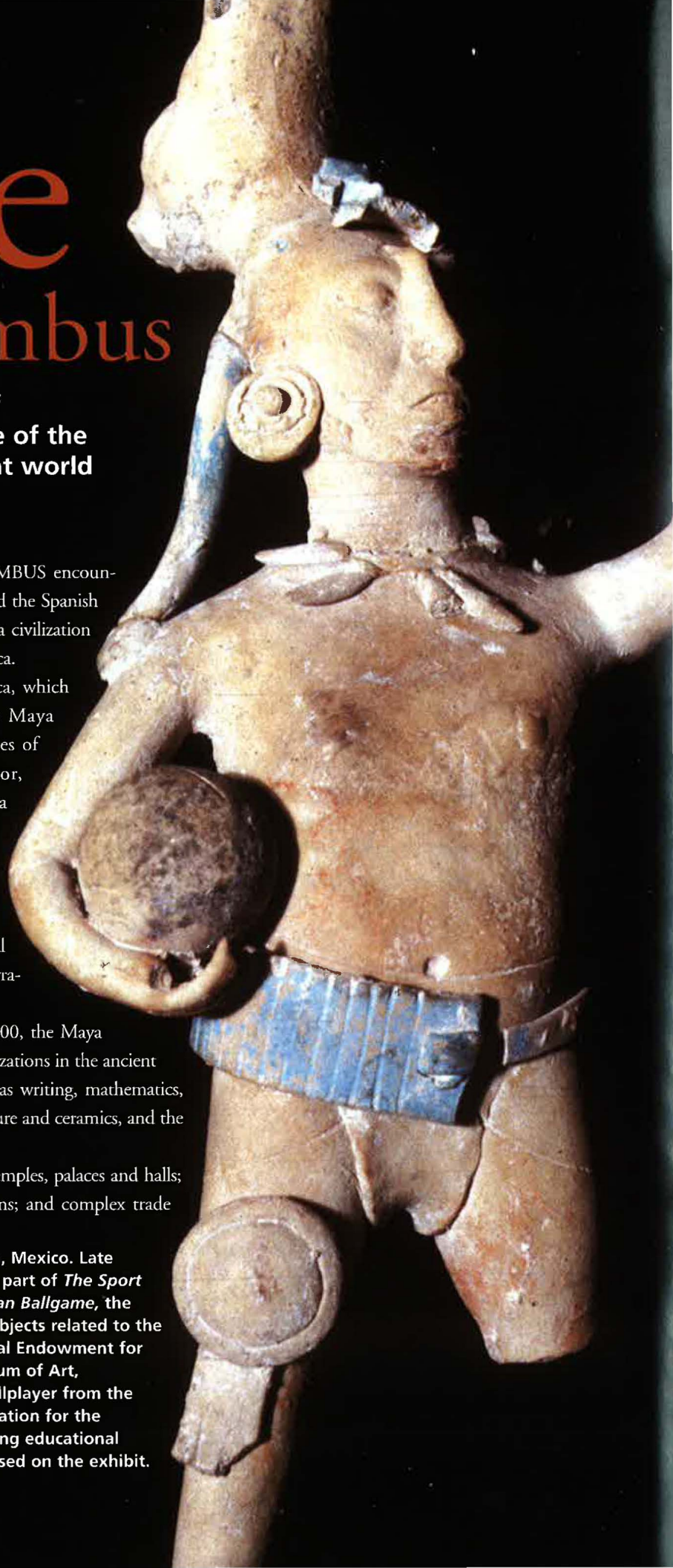
LONG BEFORE COLUMBUS encountered the New World and the Spanish conquered Mexico, Maya civilization thrived in Central America.

Archaeologists define Mesoamerica, which includes El Mundo Maya, or The Maya World, as part or all of the countries of Guatemala, Nicaragua, El Salvador, Belize, Honduras and Mexico. It is a diverse geographic area with common cultural traits: agrarian economy with maize as a primary crop; leadership by priests and elites; religious worship involving human and animal sacrifice; architecture that included pyramids and ball courts.

In the Classic Period, A.D. 250–900, the Maya had one of the most sophisticated civilizations in the ancient world, exhibiting such advancements as writing, mathematics, astronomy, a series of calendars, sculpture and ceramics, and the concept of the number zero.

They created urban centers with temples, palaces and halls; hierarchical social and political systems; and complex trade

Ceramic figure of a ballplayer. Jaina, Mexico. Late Classic (A.D. 600–900). The figure is part of *The Sport of Life and Death: The Mesoamerican Ballgame*, the first major traveling exhibition of objects related to the ballgame, sponsored by the National Endowment for the Humanities and the Mint Museum of Art, Charlotte, N.C. The figure of the ballplayer from the Hudson Museum is the cover illustration for the exhibition catalog. An award-winning educational Web site (www.ballgame.org) is based on the exhibit.





Carved jade plaque showing a ruler. Maya, from Nebaj, Guatemala. Late Classic (A.D. 600–900). The plaque is part of the Hudson Museum's permanent exhibit, *Realms of Blood and Jade*.



Copper finger ring. Mixtec, Oaxaca, Mexico. Late Postclassic (A.D. 1250–1520). The ring can be seen in the *Realms of Blood and Jade* exhibit at the Hudson Museum.

networks. Competitive ball games, considered to be the first team sports in human history, had elements similar to soccer, but were usually reenactments of warfare, with the losers often put to death.

Many aspects of Maya life are depicted in Precolumbian hieroglyphs and art. Today, some of the finest of those Mesoamerican artifacts are found at the University of Maine's Hudson Museum, the only museum in the state to showcase non-Western material culture. The museum helps foster understanding of world cultures — a particularly important focus in a post-Sept. 11 world.

The artifacts are part of the museum's 8,000 ethnographic and archaeological objects representing traditional cultures from different geographic locations and periods.

The world-class assemblage of more than 2,800 Precolumbian ceramics, lithics (stone carvings) and goldwork dating from 1500 B.C. to the Spanish Conquest are part of the William P. Palmer III Collection in the museum, located in the Maine Center for the Arts. The premier collection was donated to UMaine in 1982 at the bequest of Palmer, a resident of Falmouth Foreside, Maine.

Stuccoed tripod cylindrical vase showing a blowgun hunter. Teotihuacan, Mexico. Early Classic (A.D. 200–600). The vase is featured in the book *Teotihuacan: Art from the City of the Gods*.



Ceramic tomb figure of a dog. Comala style, Colima, Mexico. Late Preclassic (200 B.C.–A.D. 300). Part of *Images for Eternity*, a traveling exhibit organized by the Hudson Museum.

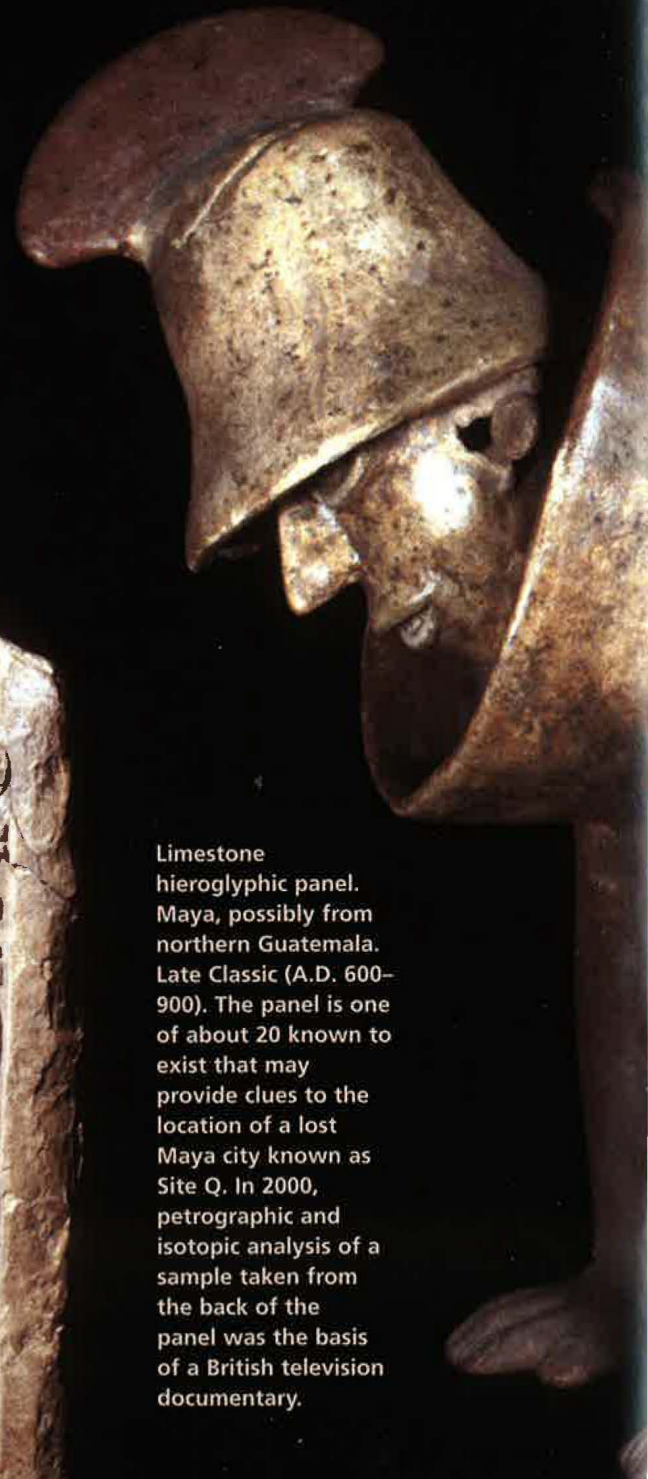




Ceramic tomb figure of a musician. Ixtlán del Río style, Nayarit, Mexico. Late Preclassic (200 B.C.–A.D. 300).



Ceramic tomb figures of a woman, Arenal style (left), and a crouching warrior, Ameca-Etatlán style (lower right). Jalisco, Mexico. Late Preclassic (200 B.C.–A.D. 300). The figures were part of *Ancient West Mexico: Art and Archaeology of the Unknown Past*, an exhibit organized by the Art Institute of Chicago and Los Angeles County Museum of Art.



Limestone hieroglyphic panel. Maya, possibly from northern Guatemala. Late Classic (A.D. 600–900). The panel is one of about 20 known to exist that may provide clues to the location of a lost Maya city known as Site Q. In 2000, petrographic and isotopic analysis of a sample taken from the back of the panel was the basis of a British television documentary.



Polychrome cylindrical vase showing the Fox God. Maya, from Nebaj, Guatemala. Late Classic (A.D. 600–900). The vase was part of the Hudson Museum's traveling exhibit *Worldviews*.



Photos courtesy of Hudson Museum

Carved emerald. Probably from Guerrero, Mexico. Preclassic (about 900 B.C.). The emerald has been the focus of interdisciplinary study at UMaine and the basis of an article in *Archaeology* magazine. The 2-inch human figure is the only known Precolumbian carved emerald.



The UMaine alumnus purchased the artifacts from 1965–70 from art dealers.

Like all collections of the Hudson Museum, the Palmer Collection is in compliance with antiquities laws.

“Most museum collections pick only the finest (artifacts) and thereby limit our understanding of who the artists were who made them. Fortunately, Mr. Palmer collected figurines of all qualities, thereby showing archaeologists that lots of different people — not just a few elite artisans — were making these objects 2,000 years ago,” notes physical anthropologist Robert Pickering, a Hudson Museum visiting research associate, and deputy director of collections and education at Wyoming’s Buffalo Bill Historical Center.

Pickering is among several internationally recognized scholars who use the collection. He is researching nondestructive methods of authenticating West Mexican tomb figures.

In the United States, UMaine has the largest institutional collection of West Mexican tomb figures — sculptures buried in shafts with the dead — dating from 300 B.C.–A.D. 200. The 550 tomb figures depict many subjects, such as a mother holding a child, musicians blowing panpipes and a warrior with a horned headdress. Also in the collection are 1,150 solid ceramic figurines that were used in household rituals.

Maya polychrome (multicolored) and incised vases from the highland sites of Nebaj and Chamá in Guatemala depict scenes of the Underworld and aspects of palace life; glyph panels offer clues for deciphering Maya language.

Since 1998, the Palmer Collection has been the foundation for the Hudson Museum’s nationwide traveling exhibits, including *Worldviews: Maya Ceramics from the Palmer Collection* and *Images for Eternity: West Mexican Tomb Figures*. A permanent installation based on the collection is *Realms of Blood and Jade: Prehispanic Mesoamerica*.

In the past decade, public awareness of the Palmer Collection has grown exponentially. The Precolumbian artifacts are unique educational and cultural resources, annually attracting thousands of visitors of all ages to the Hudson Museum.

Margaret Nagle

More information about the Hudson Museum can be found on the Web www.umaine.edu/hudsonmuseum/



"You must bypass the media images to get a realistic picture of what the world is like. Go visit. If you can't do that, seek out realistic documentaries that don't feed the usual developing world stereotypes of famine and earthquakes."

Lyombe Eko

PORTRAYAL BE

Globalization of the media opens new channels of communication and contributes to cultural misunderstanding

Lyombe Eko was introduced to America by John Wayne. A French-speaking John Wayne.

Eko, a native of Cameroon in West Africa, experienced firsthand how the mass media created a distorted picture of life in a distant land when he watched those dubbed films depicting America's mythical Wild West. That was 25 years ago.

Now an associate professor in the Department of Communication and Journalism at the University of Maine, Eko says that the globalization of the mass media continues to contribute to misunderstanding and conflict throughout the world. At the same time, the globalization of the media also opens communication channels that enable powerless people in developing countries to circumvent political repression and censorship.

His research on comparative international communication law and policy, Internet law, and African communication and cultural studies highlights the possibilities — and the limits of the globalized mass media.

“Globalization of the mass media is a two-way street. It may perpetuate stereotypes and misunderstanding, but it also makes it possible for victims of injustice to make their voices heard,” Eko says.

Apart from those Westerners, Eko's adolescent vision of America was based on episodes of *Dallas* and *Miami Vice*. Today, American movies, music and news programs are on more television and computer screens than ever before. The Internet has exponentially increased the availability of American images around the world. Those images help to form the kind of stereotypes Eko held when he arrived in the United States in 1978 to attend the University of Sioux Falls in South Dakota.

“The America we saw in Africa was one where everyone was wealthy, drove big cars, lived in a big ranch, stabbed each other in the back and slept with each other's wives. We thought that there were gunfights every day on the streets. Hollywood has been stunningly successful in selling a fantasy image of America. When I arrived, America didn't look the way I expected,” Eko says.

Increasingly, stereotypes about American people and culture lead to fears that the U.S. is bent on forging an Americanized world order based on political, economic and cultural domination. The rest of the world — from French intellectuals and politicians to Islamic fundamentalists — have reacted against that, he says.

“It looks to them like America is trying to take over the world. The French, who are protective of their culture, say that it is being eroded by the American culture propagated on radio, TV, film and the Internet.

“Islamic fundamentalists get that same image of corruption, violence and depravity from the movies. The result is that America is called the Great Satan. They don't realize that America is nowhere close to that picture, and that they are fighting against the movie shadows,” Eko says.

Likewise, the images that Americans see of other countries around the world are not accurate. The media focuses on disasters and dictators, rarely reporting on non-materialistic achievements.

“In the news media, if it bleeds, it leads. Americans see only the disease and pestilence. Good things happen, but they don't make the news. The American mass media have given American viewers a very selective and jaundiced picture of most of the world,” says Eko, whose 11 years as a broadcast journalist in Cameroon and Kenya took him to Egypt, Ethiopia, Mauritius, Tunisia, Zimbabwe, the Mideast, Europe and Canada.

The media stereotypes are underscored and compounded by the globalization of the economy, which is driven by institutions like the International Monetary Fund and World Bank. These institutions provide finan-

TRAYAL

cial aid for developing countries that agree to privatize their economies and remove trade restrictions and agricultural subsidies. The regulations allow businesses from wealthy countries to relocate, often wiping out indigenous economic development, paying low wages and charging the native population high fees for services. At the same time, some leaders of developing countries use the aid money to support their own lavish lifestyles while their people languish in poverty.

“When corporations have gone to the Third World, they have been on the side of profits, not justice. The lack of regulations and enforcement of those that do exist allows them to take advantage,” Eko says.

It’s that combination of media-induced stereotypes and actual corrupt and unjust practices that produces despair and violence, Eko says. But there’s much that can be done to close the gap between stereotype and reality, between injustice and justice. Eko believes that the globalized mass media, along with reforms to international institutions and national laws, can serve as vehicles in that process.

The globalized mass media

can provide communication channels that put pressure on policymakers and businesses to alter their practices. For instance, African Internet discussion groups raise funds from Africans abroad for development or cultural projects in specific villages. Eritrea, which gained its independence in 1993, has a lively online discussion group that helped to bring about the nation’s independence and continues to work on projects that benefit the country. Eko is active with an online group that is seeking to prevent the sale of the lands of the Bakweri people in Cameroon to an international corporation.

“The communications revolution has given the poor and dispossessed a chance to complain against the corporations or governments that are treating them unjustly. It calls their oppressors to account,” Eko says.

Furthermore, the mass media are a means of cross-cultural exchange, transporting non-Western aesthetics and culture to Western societies. For instance, media have provided the forum for African music to become the cornerstone of the World Music movement, Eko says. Such cultural exchange promotes understanding, and provides an alternative to images of pestilence, war and disease.

“You must bypass the media images to get a realistic picture of what the world is like. Go visit. If you can’t do that, seek out realistic documentaries that don’t feed the usual developing world stereotypes of famine and earthquakes. Some channels, like National Geographic and Discovery, go out of the box and show a different picture,” says Eko, himself an award-winning documentary filmmaker whose works on Africa have been featured in a number of international festivals, broadcast in New York, and acquired by universities throughout the U.S. and Canada.

The best way to further mutual understanding and respect is human contact, he says. “For someone born in the Third World, America’s greatest ambassadors are the Peace Corps. They give the best image of American ideals in action, and are the best counter to negative stereotypes.”

Gladys Ganiel



In Lyombe Eko’s video production and electronic news reporting classes, students use the Digital Mass Media Lab on campus to produce multicultural programs that promote their understanding of other cultures. They have produced programs on the international cultural groups that have performed at the Maine Center for the Arts, including the Shanghai Ballet from China, Ballet Gran Folklorico de Mexico, Inca Son from Peru, Native American Dance Theater, the Grigorovich Ballet of Russia and others. Such student productions often find their way onto The Maine Channel (42), a student-run and staffed, closed-circuit educational cable channel, supported by UMaine’s Department of Communication and Journalism and the Department of Information Technologies. Eko has overseen the long-term development of the television channel.

Hybrid Hulls

UMAINE ENGINEERS
HELPING THE U.S. NAVY
TO BUILD LIGHTER, FASTER
BOATS USING COMPOSITE
MATERIALS



Photo courtesy of Navatek Ltd., a subsidiary of Pacific Marine & Supply Co., Ltd.

THE U.S. NAVY is exploring the technology for a new generation of high-speed support ships with the help of the University of Maine and companies in Maine, Hawaii and England.

The vessels would combine traditional steel infrastructure with underwater bodies or hulls made of composite materials. The resulting hybrid could lead to ships that meet the Navy's needs for faster and lighter mid-size vessels, says Associate Professor of Mechanical Engineering Vince Caccese, UMaine's project coordinator. The technology also could have civilian applications.

This Modular Advanced Composite Hull Form project, known as MACH, has attracted more than \$4.5 million in federal funding, as well as support from U.S. Navy research labs. The Navy takes a conservative approach to ship design, and every aspect of the new technology must meet stringent performance criteria.

"The idea here is to use a metallic skeleton and a composite skin," says Caccese, whose research has included testing joint designs and composite structures for government agencies such as NASA and companies from Maine-based Bath Iron Works to Aegis Bicycles. "Whenever you do anything below the waterline, it's risky. You need to make sure that whatever you do doesn't leak. We're being cautious, looking at different kinds of joints (between composite and steel)."

Composite materials, such as glass fiber-reinforced polymers and high-strength carbon fibers, have long been used in racing yachts and other marine crafts. In the last decade, Scandinavian boat builders have extended that technology to military purposes.

The inspiration for MACH comes from the Navatek division of Pacific Marine and Supply Company, a shipbuilder in Hawaii. Like the technology behind hydrofoils — boats that ride above the waves on wing-like panels below the water — MACH vessels would incorporate sleek underwater structures that, while moving, could lift most of the ship out of the water. Power would come from an electric motor that also rides under the ship.

"Pacific Marine found that using an underwater body could result in a dramatic increase in speed using the same horsepower. This approach gets a lot of the ship out of the water and reduces drag," says Caccese.

Partners in the project include Pacific Marine in Honolulu; Applied



Photo by Toby Hollis

University of Maine mechanical engineer Keith Berube makes composite panels in Crosby Laboratory. The manufacturing process uses multiple layers of fiberglass fabric and synthetic resins.

Thermal Sciences, an engineering consulting firm in Sanford, Maine; and Nigel Gee and Associates, a naval architecture firm in Southampton, United Kingdom; as well as U.S. Navy labs in Maryland and Rhode Island.

At the University of Maine, students are collaborating with faculty and professional engineers to design, build and test hybrid hulls that can withstand underwater speeds of 50 knots or more. The challenge is to increase structure strength through the manner in which the composite panels are fastened to the internal steel frame. Moreover, the hull must be easily manufactured and maintained — all at a cost the Navy can afford.

In addition to UMaine mechanical engineers, electrical and computer engineering professor Bruce Segee is leading a team that is developing a computing and data management system to monitor structural stresses in the hull and relay information to the ship's crew. Their approach uses sensors that are built into the panels.

The idea is to give the crew an immediate view of the hull structure. "Our focus is computing power and networking so that multiple sensors can be placed inside the panel, but the number of wires going to the panel remains small and independent of the number of sensors. All you need for the electronics is power, ground and a network connection," says Segee.

Many of the experimental composite parts are being designed and made from scratch. Working with engineers Keith Berube and Randy

Bragg, students use a process known as resin transfer molding to make panels of different shapes. As many as 16 sheets of woven fiberglass fabric may go into a single panel. Liquid resin the color and consistency of maple syrup is pumped through the fabric layers. One panel can be made in about a day.

The dry composite panels are studied in UMaine's Mechanical Engineering Structural Testing Lab in Boardman Hall. There they are bolted to steel I-beams; then the joints are stressed to determine just how much pressure they can withstand without bending or breaking.

The tests have produced some interesting results. In one case, applying a high force bent the three-quarter-inch-thick steel structure, demonstrating the strength of the undamaged composite. In others, cracks in the panels helped the engineers determine how stress is distributed in the bolted hybrid connections. Before they are done, the UMaine engineers will study dozens of panels and I-beam joints.

While steel hulls are still essential for large naval vessels, Caccese sees a bright future for hybrid structures on smaller ships. Composite hulls are lighter, allowing for greater fuel efficiency and heavier payloads. Composites also are the materials of choice for stealth technology intended to avoid detection by radar.

With MACH, UMaine engineers and their partners are pushing shipbuilding into uncharted waters. It will be a long-term effort, says Caccese, with the potential to transform the nation's maritime industries.

Nick Houtman



University of Maine senior Ryan Beaumont adjusts sensors in the Mechanical Engineering Structural Testing Laboratory in Boardman Hall.

Photo by Toby Hollis

Enriching Experiments

SURROUNDED by wetlands and wooded hills, a scenic estuary near Bar Harbor, Maine, seems like one of the last places to study water pollution. But University of Maine graduate student Rachel Keats has been using Northeast Creek estuary on the northeast side of Mt. Desert Island to study changes in aquatic food webs when nutrient levels rise as a result of runoff.

Keats worked in a cooperative project with Laurie Osher, assistant professor in the Department of Plant, Soil and Environmental Sciences, and Hilary Neckles at the U.S. Geological Survey (USGS). The integrated ecosystem project led by USGS is one of the few in Maine's coastal waters exploring the potential for such changes.

"The goal was to find out at what level of nitrogen in the water there was a response in the ecosystem," says Keats of her experiments that began in 2001. The Niskayuna, N.Y., native received her master's degree in ecology last year, and will begin graduate work this fall in the UMaine Department of Spatial Information Science and Engineering.

In her research, Keats collected samples of invertebrates, sediment and plant materials from experimental enclosures established and maintained by USGS, as well as from unenclosed



Photo courtesy of Hilary Neckles, USGS

control locations. Each enclosure, about the size of a washing machine, had clear plastic sides and an open top and bottom. Nitrogen fertilizer was added to the enclosures at three different constant rates to simulate nutrient enrichment at three different levels. To provide a control, researchers did not add nitrogen to some of the enclosures.

Keats estimated the numbers and types of invertebrates, and sent materials to a laboratory for stable isotope analysis. Some stable isotopes can indicate changes in ecological processes.

"At the highest levels of loading, there was a shift in the insect community," says Keats. "There was an increase in the number of worms.

Damselfly larvae and midges that graze on algae were pretty much wiped out. Generally, the community shifted from a diverse group of insects that graze and specialize in what they eat to a deposit-feeding community — insects that will eat anything."

The changes were most significant at levels of nutrient enrichment that are higher than what is typically seen in developing watersheds, Keats adds. In that sense, they represent an extreme scenario of actual ecosystem change in response to development.

Keats also documented similar but less severe changes at lower levels of enrichment.

SECURING THE FUTURE

GENE CONNOLLY, a University of Maine senior in computer science from South Berwick, Maine, never thought he'd worry about — let alone work on — issues related to homeland security.

"The subject never crossed my mind while I was growing up. If anyone had asked, I guess I would have thought that it was something that people in other countries worried about," he says.

For his honors research project, Connolly is working with UMaine Fulbright Visiting Professor Anatoly Sachenko, director of the Institute

of Computer Information Technologies at the Ternopil Academy of National Economy in the Ukraine. They are exploring ways to link Internet addresses with geographic locations and to analyze electronic information for its potential relevance to terrorism.

In addition to Sachenko, Connolly's advisors include computer science professors George Markowsky and Tom Wheeler.

Connolly came to UMaine for academic and financial reasons — and the UMaine swim team. He was the first student at Marshwood High School to win a state swimming medal



Photo by Toby Hollis

(500-yard freestyle). At UMaine, Connolly has competed for four years and is team captain.

Complementing his university experience, Connolly worked two summers for EigenSoft Inc., a business software developer located in Portsmouth, N.H.



Women missing in places of power

DESPITE A COUPLE OF HIGH-PROFILE WOMEN in the Bush administration, female voices continue to go unheard at the tables of power, according to investigative journalist Marie Tessier.

The University of Maine assistant professor of journalism and mass communication reviewed records of cabinet-level appointments of several presidential administrations, as well as reports by groups such as the American Bar Association and the American Association for the Advancement of Science.

Writing in a recent issue of *Ms.* magazine, Tessier concluded that women are not well represented in the highest levels of government — or in boardrooms or courts. In addition, women continue to earn less than their male counterparts.

“The nation’s most talented women are getting welts from bouncing off glass ceilings.” Marie Tessier

Tessier found that during his first year in office, 26 percent of George W. Bush’s executive branch nominees were female. By comparison, in the first year of the Clinton administration, 37 percent of nominees were women. This is the first such decline since the Nixon presidency.

The picture for women was just as bleak in other realms. Women account for about 15 percent of federal judges and law firm partners, and only 10 percent of law school deans and general counsels. Only one in 10 corporate officers are women, and female scientists earn a third less than their male counterparts.

“The lagging role of women in the Bush administration is a powerful allegory for the glass ceiling that continues to block the advancement of women in the United States. A few women are in powerful positions in all sectors of society, but in the main, women’s voices still go unheard at the tables of power,” Tessier says.

Her findings are especially troubling, Tessier says, because there is a common complacency about continuing problems with working conditions for women. Her investigative reporting shows that the progress remains incomplete and that “the nation’s most talented women are getting welts from bouncing off glass ceilings.”

THE FIRST AMERICAN-STYLE UNIVERSITY in eastern Europe will mark its 12th anniversary in September, but it will do so without its long-time president, who is retiring after a decade of leadership.

Since 1993, Julia Watkins, a University of Maine faculty member and administrator, has served as president of American University in Bulgaria, or AUBG. She is retiring at the end of this academic year, and will receive an honorary degree from the University of Maine during commencement ceremonies.

AUBG is a four-year liberal arts institution in Blagoevgrad. It opened in 1991 with planning assistance from the University of Maine, including design and monitoring of AUBG’s academic programs leading to a UMaine-accredited degree.

As of 2001, AUBG was fully accredited by the New England Association of Schools and Colleges, and UMaine is represented on the university’s board of trustees.

The two institutions maintain a student exchange, with a number of AUBG graduates continuing their education at UMaine.

UMaine was invited to participate in the establishment of AUBG by the Republic of Bulgaria, the city of Blagoevgrad and the Open Society Foundation.

The eastern Europe university, which has seen its enrollment grow to 650 students from 20 countries, is funded by tuition, the government of Bulgaria, the U.S. Agency for International Development and private support.



Helping Henry

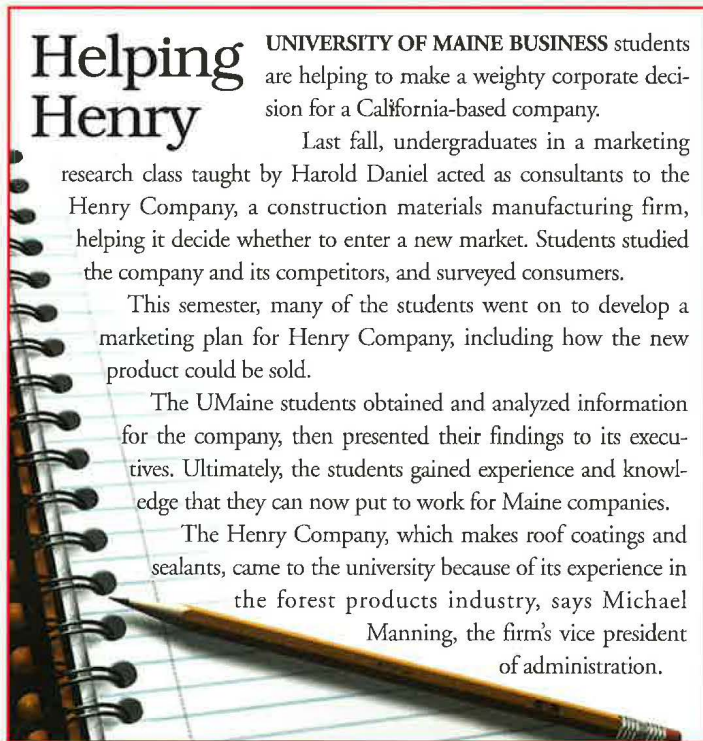
UNIVERSITY OF MAINE BUSINESS students are helping to make a weighty corporate decision for a California-based company.

Last fall, undergraduates in a marketing research class taught by Harold Daniel acted as consultants to the Henry Company, a construction materials manufacturing firm, helping it decide whether to enter a new market. Students studied the company and its competitors, and surveyed consumers.

This semester, many of the students went on to develop a marketing plan for Henry Company, including how the new product could be sold.

The UMaine students obtained and analyzed information for the company, then presented their findings to its executives. Ultimately, the students gained experience and knowledge that they can now put to work for Maine companies.

The Henry Company, which makes roof coatings and sealants, came to the university because of its experience in the forest products industry, says Michael Manning, the firm’s vice president of administration.



Going to great heights

IN A QUEST to understand what drives the climate of North America, a team of American, Canadian and Japanese scientists is studying ice cores collected from the highest mountain range in Canada.

One of those researchers is University of Maine geologist Karl Kreutz, who is studying the ice collected in the St. Elias Mountains in the Yukon Territory, including a 1,100-foot core — the deepest taken from the Eclipse Icefield near Canada's highest peak, Mt. Logan.

Mt. Logan is well positioned to reflect what's going on in the North Pacific. Kreutz and his colleagues hope to shed light on an El Niño-like weather cycle known as the Pacific Decadal Oscillation, or PDO.

Scientists know that PDO changes every 20–30 years, affecting weather across North America. PDO, centered in the

north Pacific, has cool and warm phases. Ocean surface temperatures and dominant wind directions are different for each phase. Weather data have been collected since about 1900, according to Kreutz, although scientists have used tree ring analysis to extend that record back to about 1650.

Better knowledge of PDO may help answer questions about an apparent climate change in northwest North America. The region is home to the largest icefield and largest number of tidewater glaciers on the continent. Many glaciers have retreated dramatically over the last two decades.

Kreutz has climbed in some of the world's highest mountain ranges to collect ice cores. His goal is to understand where the moisture came from, how far it traveled to reach the glacier or icefield and how the atmosphere was circulating at the time.



21st-century weather

A NEW U.S. WEATHER STATION at the University of Maine's Rogers Farm is part of a system that will provide national climate data for the 21st century. The automated facility is part of the Climate Reference Network of the National Oceanic and Atmospheric Administration.

The UMaine station is one of more than 100 being erected to monitor the weather nationwide, providing data that can be compared to past observations to determine present and future climate change, says Greg Zielinski, Maine state climatologist and a research associate professor in the UMaine Institute for Quaternary and Climate Studies. The only other network station in Maine is in the Aroostook National Wildlife Refuge in Limestone.

Weather data from the UMaine station is transmitted by satellite to the Oak Ridge National Laboratory in Tennessee, where it is made available to researchers and the public.



Missing Lynx

EARLIER THIS YEAR, a federal court ruled that the Department

of the Interior violated the Endangered Species Act by failing to sufficiently protect the Canada lynx from extinction in all four of the wild cat's remaining ranges in the U.S.

In the suit brought by Defenders of Wildlife, the conservation group argued that lynx in the Northeast, Great Lakes and Southern Rockies were being ignored in favor of recovery efforts in the Northwest. The court's summary judgment requires that all four lynx zones be recognized and critical habitat for the species be identified.

"The recent court ruling will likely result in an upgrade of the legal and conservation status of lynx, and increased awareness of the important role that Maine can take in conservation and recovery efforts for this species in the United States," says University of Maine Professor of Wildlife Ecology Daniel Harrison. "It will affect the way that federally owned forestlands are managed for lynx habitat."

Today in the United States, it is estimated that fewer than 200 lynx remain, mostly in Maine, Minnesota, Montana and the state of Washington.

The lynx is one of several animal species that Harrison and other University of Maine wildlife ecologists study. Currently, Harrison and his colleagues are developing a habitat model to predict the occurrence of lynx in Maine.

Harrison is now advising Ph.D. student Angela Fuller, who is working on lynx-habitat relationships in northern Maine. In addition, Harrison and Bill Krohn, leader of the Maine Cooperative Fish and Wildlife Research Unit, recently co-advised two graduate students in wildlife ecology — Jessica Homyack and Christopher Hoving — who have worked on lynx ecology and relationships with forest management practices in eastern North America.

The research findings can be used by federal agencies to manage lynx populations in accordance with the U.S. Endangered Species Act. State agencies also can use the information to identify areas of suitable habitat for further population survey and research.

The Canada lynx, which is slightly larger than a bobcat, was once found in 16 states. Today in the U.S., it is estimated that fewer than 200 lynx remain, mostly in Maine, Minnesota, Montana and Washington. In March 2000, the lynx was designated as threatened in the U.S.

IN MAINE, BLACK FLY SEASON is just around the corner. Time to dig out the bug spray and monitor the weekly “black fly report” on Maine Nature News — an early-warning system for the infamous infestation.

Maine Nature News (www.mainenature.org), a daily diary of occurrences and observations in the natural world, has been online since 1996. It was created by University of Maine librarian Frank Wihbey and offered through Fogler Library as a public service to the state. Wihbey compiles daily reports from outdoor enthusiasts in Maine in an effort to chronicle nature and raise awareness of time-limited events — the news of nature — like the short seasons of trilliums and mayflowers, the ripening of wild blueberries and streams rising with the first thaw.



The goal is to emphasize what’s happening in nature, and de-emphasize human events and activities about nature.

Readers also post nature-related questions on the Web site. To date, queries have come from as far away as Sweden.

’Tis the season

The most-asked questions are about black flies. Correspondents’ reports about the first sightings south to north and coast to inland, plotted on a state map, give outdoor enthusiasts clues about when the season will be in full swing. Wihbey publishes weekly updates from May–July, rating them on a scale of 1–3: 1 — none or few; 2 — some, but tolerable; 3 — many, a royal pain.

The second most-asked questions concern bird identification and behavior.

The Age of Language

Illustration by Jennifer Johnson



A YOUNGSTER’S FIRST WORDS can be cause for celebration — and an opportunity to see how he or she is developing, according to University of Maine researchers involved in the Early Language Project.

Alan Cobo-Lewis, UMaine associate professor of psychology, is leading the research project to evaluate a computerized version of the MacArthur Communicative Development Inventories (CDI), a widely used child language development test based on parents’ observations of what their children say and understand. The project is funded by the National Institutes of Health.

Cobo-Lewis has created a computer adaptation of the traditional written test with assistance from members of an international CDI advisory board; UMaine computer scientists Curtis Meadow and George Markowsky, who are part of a software development team at Trefoil Corp., in Orono, Maine; and Bonnie Blagojevic, research associate at UMaine’s Center for Community Inclusion.

By knowing which sounds and words a child produces and comprehends, the adaptive CDI arrives at an estimate of what psychologists call the child’s “language age.” A significant lag in language skills can indicate a developmental delay.

Using a computer program, a child’s language level can be calculated on the basis of each successive word. That calculation is done with reference to a standardized database of test results from about 1,600 children.

In addition to comparing the computerized test to the traditional version, Cobo-Lewis will evaluate how well the test tracks a child’s developing language skills over time.

The computerized method has already helped Cobo-Lewis determine how likely a parent’s response to any particular word on the test indicates the child’s language age.

Plant a Row for the Hungry

FOR THE THIRD consecutive growing season in Maine, home gardeners are cultivating extra produce to feed others in need as part of the Plant a Row for the Hungry (PAR) program.

Established by the Garden Writers Association of America in 1995, PAR is a nationwide community service project to encourage growers to donate surplus produce, or plan ahead to plant vegetables and fruits for food pantries and shelters. In 2000, the initiative was supported by University of Maine Cooperative Extension and three seed companies in the state.

That first year, more than 400 home gardeners and farmers in Maine participated. Extension Master Gardeners grew thousands of pounds of fruits and vegetables. UMaine’s Highmoor Farm in Monmouth, Maine, donated more than 1,800

pounds of peppers, Chinese cabbage, winter squash and onions from variety trials.

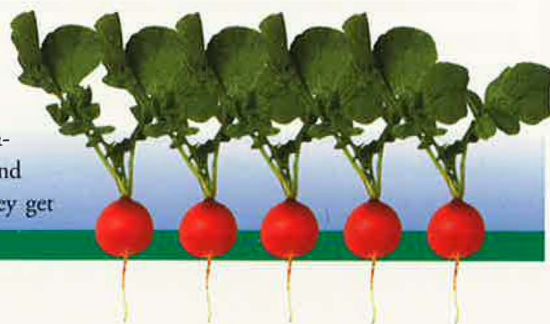
One grower in Phippsburg, Maine, donated more than a ton of food to an area soup kitchen. His enthusiasm for the program led him to apply for and receive a grant to build a greenhouse to grow greens and vegetables throughout the winter.

Statewide in 2000 and 2001 combined, more than 52 tons of fresh produce was donated to food pantries and shelters. Last year, 56,017 pounds of produce valued at almost \$95,000 was donated. This year’s goal in Maine is 65,000 pounds.

Participants are urged to “plant thickly, plant often, harvest regularly, report donations (to their county Extension offices) and hope for excellent growing weather.” They get

advice on the varieties that have the best disease and pest resistance, and yield.

Home gardeners, as well as youth and civic groups, donate small quantities of produce frequently during the growing season, or large quantities of crops that ripen all at once. In areas of the state like Cumberland County, several farmers and fruit growers support the program by allowing PAR volunteers to glean fields and orchards of produce left after a harvest.





UNIVERSITY OF MAINE senior Marcus Urann was sitting in a dorm room one night with a small circle of friends when he floated his idea for promoting scholarship and its place in higher education. The time had come, he said, to organize an honor society for outstanding students of all academic disciplines.

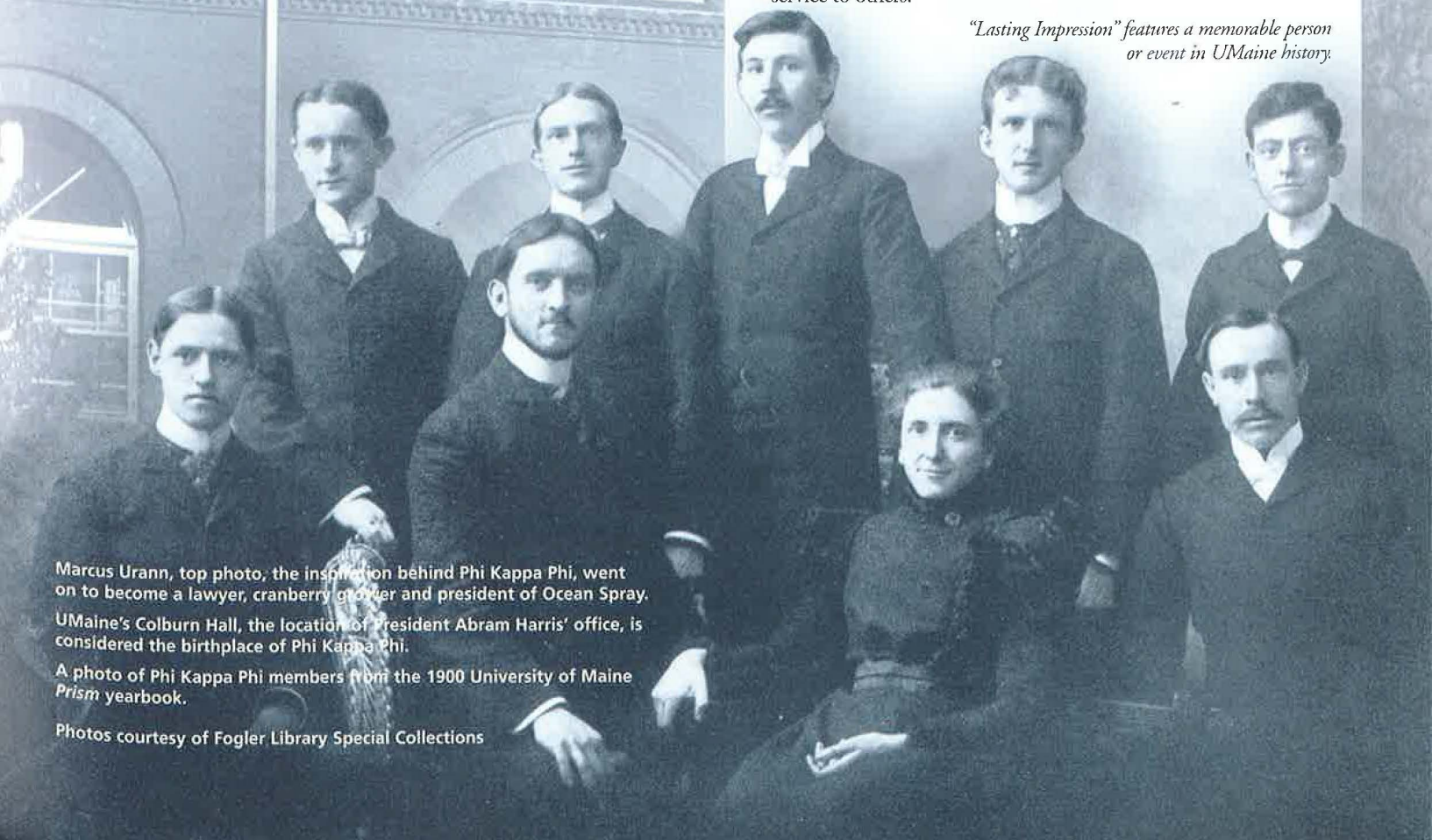
Urann was a member of the UMaine Class of '97 — 1897. That year, with the encouragement of then university President Abram Harris, Urann and two classmates formed a local honor chapter, first called Lamda Sigma Eta, then, briefly, the Morrill Society.

In 1900, the chapter was renamed Phi Kappa Phi, with a motto “let the love of learning rule humanity.” UMaine is Chapter 1.

That year, President Harris and the presidents of Pennsylvania State College (now Pennsylvania State University) and the University of Tennessee collaborated to expand the UMaine chapter into a national honor society.

What began with the initiation of 10 of UMaine’s top students, the president and two faculty members more than a century ago has grown into a leading international honor society with a million members and 300 chapters worldwide. Its mission: “to recognize and promote academic excellence in all fields of higher education, and to engage the community of scholars in service to others.”

“Lasting Impression” features a memorable person or event in UMaine history.



Marcus Urann, top photo, the inspiration behind Phi Kappa Phi, went on to become a lawyer, cranberry grower and president of Ocean Spray.

UMaine’s Colburn Hall, the location of President Abram Harris’ office, is considered the birthplace of Phi Kappa Phi.

A photo of Phi Kappa Phi members from the 1900 University of Maine Prism yearbook.

Photos courtesy of Fogler Library Special Collections

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In a league of his own

MARK "ROOKIE" LETENDRE was 16 when he met the man who changed his life — long-time University of Maine head athletic trainer Wes Jordan.

In Jordan's youth clinic for aspiring athletic trainers that summer in 1973, Letendre learned the importance of integrity, honesty and a passion "to do the job right."

Later, as a physical education major at UMaine, Letendre was inspired by Jordan's knowledge, leadership and ability to communicate.

"He was constantly challenging me," says Letendre, a Major League Baseball athletic trainer for the past 25 years. "He always had respect for the status quo and he enjoyed the fun of thinking out of the box."

Hundreds of UMaine students came to know Jordan, considered to be one of the top athletic trainers in the country. He helped make the dreams of student-athletes and aspiring athletic trainers a reality. Now, it's their turn to honor their mentor and role model.

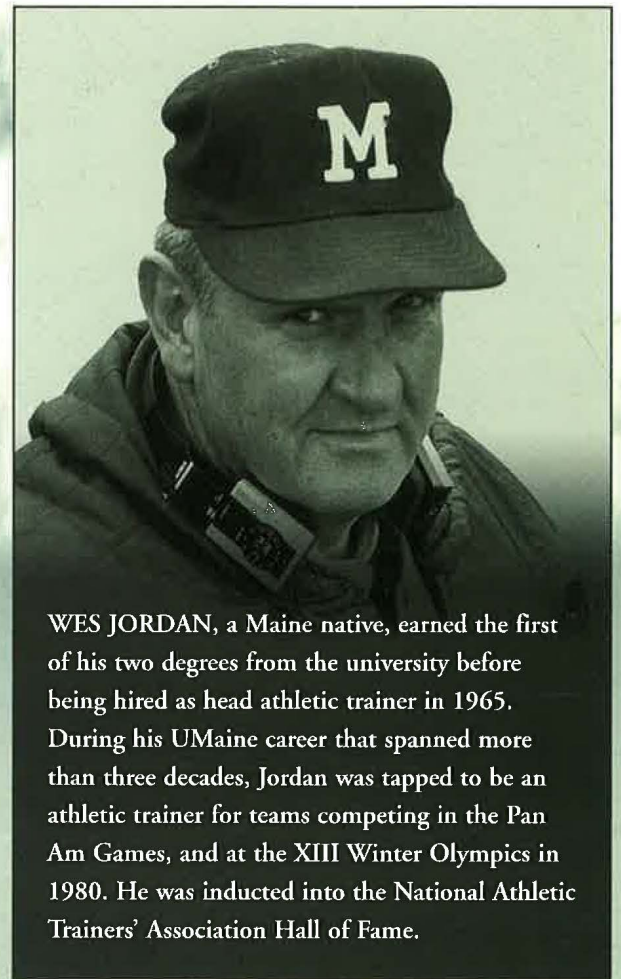
Before his death Feb. 26, 2002, Jordan was working with UMaine to establish an accredited Athletic Training Education Program. To support his efforts, the Wesley D. Jordan Fund was created in the University of Maine Foundation.

The first \$500,000 will be earmarked for the renovation of the ground floor of Lengyel Hall into a state-of-the-art athletic training teaching facility — the Wes Jordan Athletic Training Education Complex — that may be open as early as next year. An additional \$250,000 will be raised for student scholarships.

The complex will be home to the Athletic Training Education Program, which could be accredited by 2006, and the Maine Center for Coaching Education, for which an operating endowment will be established.

"Wes created a nationally recognized program that brought great credit to the university and the state, and he put quality people out there who have done the same," says network sports announcer and alumnus Gary Thorne. "The greatest tribute to him is it's carrying on."

Photos courtesy of Fogler Library Special Collections



WES JORDAN, a Maine native, earned the first of his two degrees from the university before being hired as head athletic trainer in 1965. During his UMaine career that spanned more than three decades, Jordan was tapped to be an athletic trainer for teams competing in the Pan Am Games, and at the XIII Winter Olympics in 1980. He was inducted into the National Athletic Trainers' Association Hall of Fame.

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