

UMaine Today

CREATIVITY AND ACHIEVEMENT AT THE UNIVERSITY OF MAINE

APRIL / MAY 2002



**Spending a
semester by the sea**

Out of this world

**Ensuring
quality of life**

From the President

ONE OF THE MOST serious challenges facing Maine is the exodus of the state's young people. In recent years, a majority of Maine's college-bound high school graduates left the state for educational opportunities. The reasons are many, including a young person's inclination to experience other locales. But too often their decisions have been related to a lack of encouragement to look at in-state options and the lack of incentives to make staying in Maine appealing.

It's well documented that a high percentage of students who leave their home state for post-secondary education do not return after graduation; they tend to find employment in the region where they went to school or somewhere else where opportunities exist.

This youthful "brain drain" disadvantages the state in many ways. Maine loses some of its best talent when college-bound students go out of state. It reduces the size and quality of the talent pool from which the state's businesses, industries, and government agencies draw. Our cities and towns lose much-needed public citizens to serve in leadership positions.

In the past four years, I have visited over 100 Maine high schools to discuss this and related issues with students, teachers, guidance counselors, and administrators. They understand the seriousness of this problem and want to work together to address it. They know that it's not that Maine's high school graduates do not move on to higher education; it's that too many of them move out of state for it.

Maine has some of the finest public and private colleges and universities in the nation.

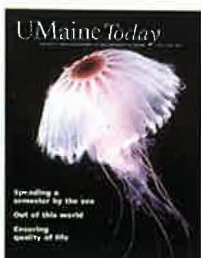
Our state should be a magnet for college-bound students. Fortunately, the latest numbers offer encouragement: the proportion of recent high school graduates who stayed in Maine for post-secondary education last year rose to 50 percent, a level that it hadn't reached in several years.

UMaine attracts some of the best in-state students, especially when we are able to compete with out-of-state schools by offering comparable scholarship opportunities. This academic year alone, UMaine attracted one-quarter of Maine's 2001 high school valedictorians and salutatorians through our Top Scholar program. UMaine also attracted about a third of the state's prestigious George Mitchell Scholarship recipients. These top students could have enrolled just about anywhere; the fact that they chose UMaine is good for them and for their home state's future.

Maine's economic growth depends on our younger generations' ability to find rewarding and satisfying career opportunities and an attractive quality of life in Maine. The challenge facing all educators and policy makers is to provide the necessary incentives, encouragement, and opportunities. With state elections for governor and the legislature this fall, all of us can contribute to Maine's future by helping to keep our candidates and the voters mindful of that challenge.



Peter S. Hoff
President



ON THE COVER: The sea nettle, *Chrysaora quinquecirrha*, is a jellyfish found off the East Coast, including in the Gulf of Maine. The shallow-water species with a painful sting can grow up to 2 feet long. It is one of many animals, living in intertidal to deep sea habitats, studied by University of Maine Professor of Marine Science Kevin Eckelbarger. Eckelbarger, director of UMaine's Darling Marine Center, Walpole, Maine, conducts research on the reproductive biology of marine animals, such as jellyfish, mollusks, worms and starfish. Photo by Pamela Blades-Eckelbarger



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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 90 four-year, 61 master's, and 24 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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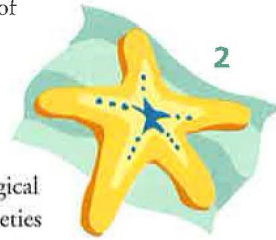
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At the Darling Center on the Gulf of Maine, marine science and non-marine science undergraduates are immersed in the study of ocean science through an atypical learning experience called Semester by the Sea.



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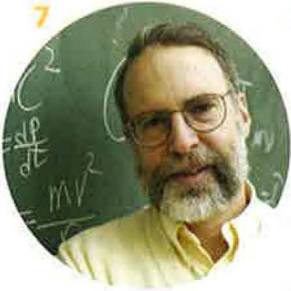
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Professor of Physics and Astronomy Neil Comins has spent a lifetime exploring the cosmos — and helping others to do the same.



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By 2020, Maine's elderly population is projected to grow by more than 40 percent. In response to the needs of the rapidly increasing population, the University's new Center on Aging is focusing on high-quality training, education and practical research to make a difference in people's lives.



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Russ Quaglia is a national expert on student aspirations. An educator and researcher, Quaglia is committed to the philosophy that all young people can be productive contributors and achievers in schools.

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A SEMESTER BY THE SEA



Photo by Linda Healy

THE GULF OF MAINE BECOMES A LIVING LABORATORY FOR UMAINE STUDENTS

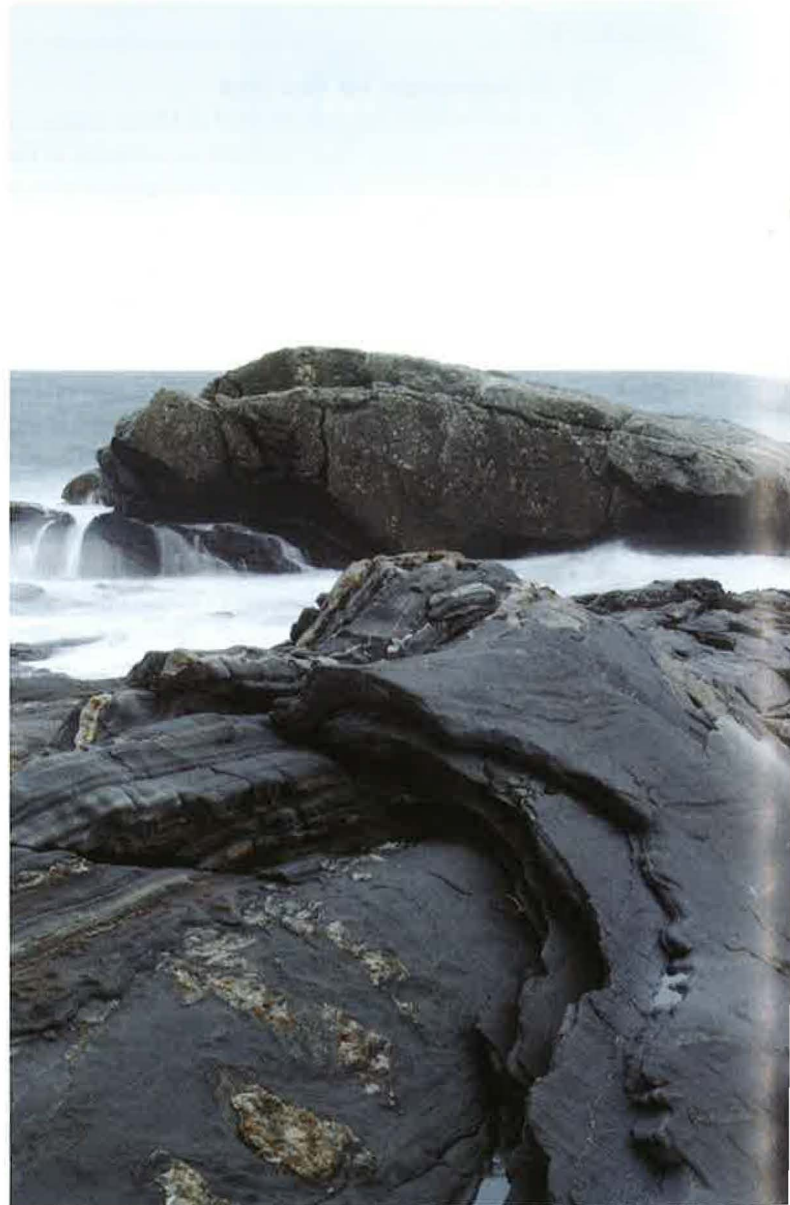
TO CATCH LOW TIDE one weekend, University of Maine students headed to Pemaquid Point. A spectacular sunset ignited the sky as they picked their way along the rocky shore. In the twilight, they set to work collecting tiny marine animals for their invertebrate zoology class.

“That epitomizes what Semester by the Sea is all about,” says senior Maryann Morin, a marine biology major from Oakland, Maine. “(It’s) students on their own time doing field collections, not because someone is making us, but because we enjoy doing the fieldwork and looking at what we collect under the stereoscope for our class.”

At UMaine’s Ira C. Darling Marine Center in Walpole, Maine, one of the leading marine research stations on the eastern seaboard, undergraduates are immersed in the study of ocean science through a special program called Semester by the Sea (SBS). SBS students take daylong courses in a variety of marine science areas, including maritime history and archaeology (i.e. shipwrecks), marine ecology and geology, design of marine organisms and biological modeling.

“It’s the integration of lecture with field and live lab work that is so different. Also, having the whole day for a course, rather than fixed blocks of time for lecture and lab, which are often on different days, allows me to respond to what might be happening in the environment. I love teaching this way.”

Les Watling



Their teachers are some of the top marine scientists in the country, and are among the more than 50 School of Marine Science researchers at UMaine. The students live on the Darling Center campus, a stone’s throw away from their learning environment — high-tech classrooms, state-of-the-art research laboratories, and the natural wonder of the Damariscotta River and the Gulf of Maine.

Only a handful of universities offer similar undergraduate opportunities to take a semester by the sea. The strength of UMaine’s program is in its faculty and its setting, which offers a remarkable diversity of habitats — sandy beaches, estuaries, rocky shorelines, kelp forests and intertidal zones that are world-renowned.

“The Semester by the Sea program gives undergrads a taste of what marine biology is really like. It is based on the premise that marine biology is best studied in the field where the organisms live.”

Kevin Eckelbarger

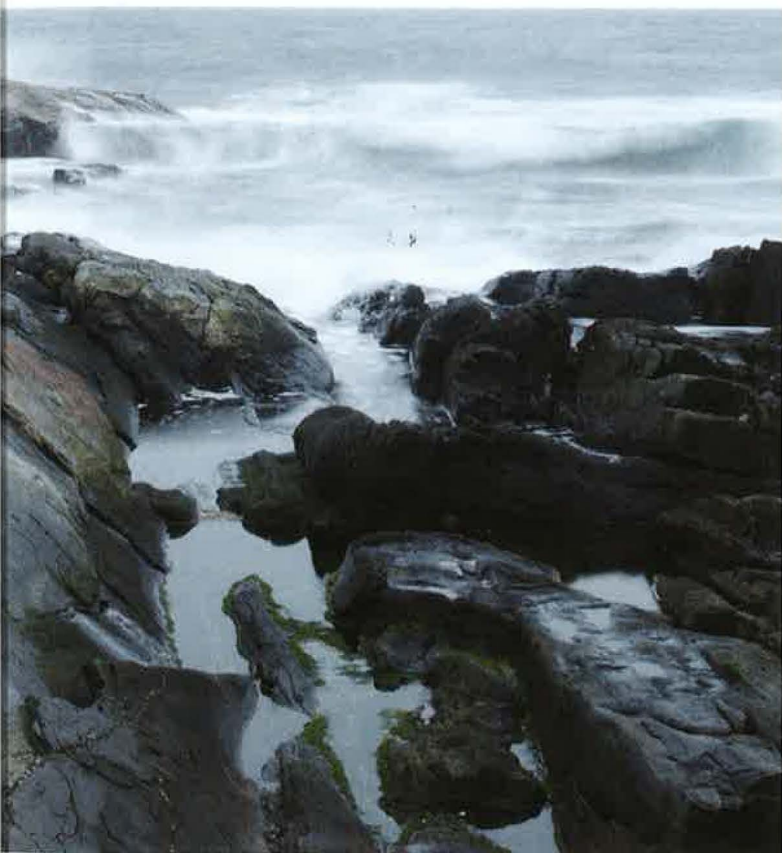
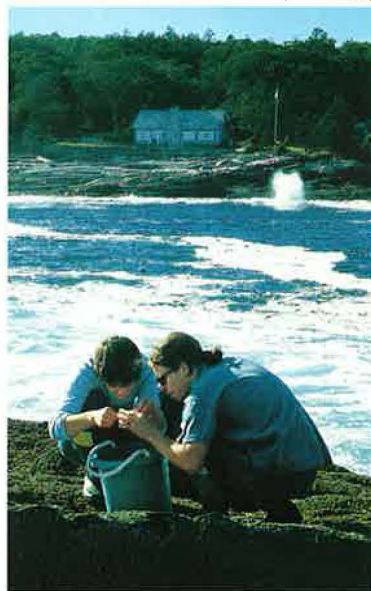


Photo by Toby Hollis



Photo by Linda Healy

Photo by Linda Healy



“Most marine researchers remember a course that turned them on to science. In Semester by the Sea, we’d like to capture that sense of excitement and use it as a vehicle to teach marine science, along with the quantitative, analytical and other scholastic skills that are likely to be useful to graduates, regardless of their discipline.”

Bob Steneck

For marine science and non-marine science majors alike, Semester by the Sea is an atypical learning experience that can take a little getting used to. A class may start at 6 a.m. to take advantage of the tide. Three-hour lectures aren’t unusual. Fieldtrips inevitably involve hip boots and very cold water. Lights from the research labs burn into the night. By semester’s end, each student has to correctly identify 100 marine invertebrates to fulfill one of the course requirements.

“In SBS you’re doing your own species collection, gathering information and getting your own results,” says Keith Shadle, a junior in marine biology from Indiana. “When you read the (published) research papers, often it’s our faculty who have written them.”

Two of those faculty members are Pew Fellows in Marine Conservation — Les Watling, professor of oceanography, and Bob Steneck, professor of marine sciences. Both are dedicated scientists whose marine research is recognized around the world and whose enthusiasm for teaching is contagious.

Watling remembers one SBS trip to Reid State Park to dig on the beach for meiofauna — tiny creatures that live among the sand grains. “The day was going to be cool, but beautiful and sunny,” he says. “So I grabbed my lecture notes and we had class sitting on the rocks above the beach before the tide was low enough for sampling.”

There also are days when nature isn’t quite so cooperative. “We have had some cold, rainy days bouncing around in a boat, with some of the students getting a little green about the gills,” Watling says, “so it’s not all beautiful days at the beach.”

The hope, says Kevin Eckelbarger, Darling Center director and an SBS teacher, is that a semester by the sea will forever change how students view a coastline. “No matter what they do for the remainder of their lives, I hope that when they walk along the seashore, they have a much deeper appreciation of the beauty and amazing complexity of the oceans and the organisms that live in them,” he says.

by Margaret Nagle



This study is important because it is the first analysis of the DNA from paleofeces that recovers information not only on the diet of the ancient peoples but also DNA of the people themselves. This is the first step in being able to analyze the DNA of ancient people and biological affinity, as well as potentially obtaining information regarding ancient health and disease.”

Kristin Sobolik

Photo by Toby Hollis

Prehistoric Health

UMaine anthropologist's analysis of biological evidence offers unprecedented clues to the diets and lives of early Americans

On a warm fall morning 2,000 years ago, she left her bed of wild grasses and oak leaves at the back of the rock shelter to prepare a small cooking fire. Breakfast for her children and elderly parent included acorns ground the night before, dried turtle meat and prickly pear fruit.

The men in her clan were hunting in a narrow canyon in the mountains.

If the weather was favorable that year, these nomadic people of what was to become the American Southwest would have had a bounty of yucca fruit, wild grapes, persimmons and greens. Fish, squirrels, antelope, deer, birds and lizards would have been some of the sources of meat. However, in dry years, food would have been scarce, and the clan might have had to stay on the move.

A sequence of dry years could have meant starvation or, at least, increasing competition with other clans for food and water.

Clues about these ancient American societies and the environmental changes they endured have come from a variety of sources. Rock art, stone tools, skeletons and midden heaps have been used by archaeologists to describe social organization and living conditions that go back 10,000 years or more.

KRISTIN SOBOLIK OF THE University of Maine Department of Anthropology and Institute for Quaternary and Climate Studies is part of a scientific team that has advanced another source of evidence: DNA from ancient human feces, or coprolites.

She is contributing to our understanding of the past.

"In the soil pits that we dig, coprolites stand out because of their shape. They also tend to be distinct from soil particles," Sobolik says. "Once we get them back to the lab, we

also run tests that distinguish them from the scat of other animals."

Scientists have long used the presence of undigested seeds, hair and other clues in coprolites to determine what people ate. The power of DNA analysis allows scientists to expand their search to include other foods, especially those that might have been more completely digested.

The author of several publications on the health, diet and nutrition of prehistoric Americans, Sobolik specializes in the analysis of biological evidence at archaeological sites. She

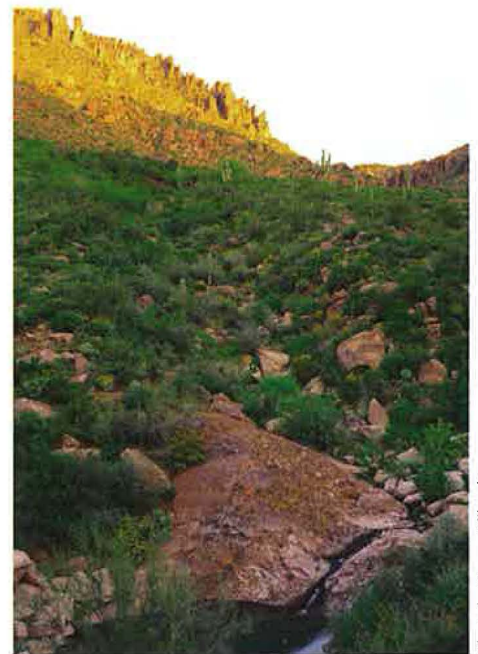


Photo by Morey Milbradt

Arid conditions in the Southwest preserve the story of ancient American cultures in bones, stone tools and other artifacts in rock shelters. Kristin Sobolik and other scientists use this evidence to understand how people survived in a changing environment.



Graduate and undergraduate students study artifacts from Kristin Sobolik's fieldwork. Students love participating in research — the feeling of being engaged in the scientific process, Sobolik says.

has worked in both the Southwest and the Northeast since she received her Ph.D. at Texas A&M in 1991.

Sobolik can sift through layers of soil and often complex mixtures of animal and plant remains to distinguish clues that are relevant to human activity from those that simply reflect the presence of wildlife. In describing evidence that is uniquely human, she says, scientists must be careful to set aside items left by rodents, owls, mountain lions and other animals.

Archaeologists working in the Southwest have an advantage over their colleagues elsewhere, says Sobolik. Extremely dry conditions promote the preservation of bones and other remains. By contrast, Maine's acid soils and relatively high humidity cause materials to decompose rapidly.

Last year, in an article in the *Proceedings of the National Academy of Sciences*, Sobolik and her colleagues published the first paper describing the results of DNA analyses of human fecal samples. The three coprolites came from four to five feet below the ground in Hinds Cave, a rock shelter in southwest Texas. Carbon dating showed them to be more than 2,000 years old.

The data indicate a surprisingly rich diet composed of a variety of plants and animals, including acorns, yucca, bighorn sheep, pronghorn antelope and cottontail rabbit.

"This study is important because it is the first analysis of the DNA from paleofeces that recovers information not only on the diet of the ancient peoples but also DNA of the people themselves," says Sobolik.

"This is the first step in being able to analyze the DNA of ancient people and biological affinity, as well as potentially obtaining information regarding ancient health and disease."

In a separate study published in 1995, Sobolik and another team of scientists analyzed hormones in coprolites to see if males could be distinguished from females. Based on work in Mammoth and Salt caves in Kentucky, Sobolik's initial study showed that the analysis could be done. All the coprolites at the sites were from men.

It is important to understand how ancient societies were organized and how subgroups behaved, Sobolik says. That includes differences between the genders.

"Archaeologists often talk about how the population did this or that, but we know that there are subgroups of men and women, as well as children," says Sobolik.

by Nick Houtman

What about the children?

DURING A SABBATICAL at Grinnell College, Iowa, in 2000, University of Maine Associate Professor of Anthropology and Quaternary Studies Kristin Sobolik completed the first comprehensive analysis of what southwestern archaeological studies reveal about children's health. Her analysis could provide the basis for a re-evaluation of theories about the nutritional adequacy of ancient American diets.

Sobolik analyzed studies that covered about 1,500 years, starting in the first century A.D. In particular, she focused on the condition and ages of skeletal remains.

Sobolik found that the average infant mortality rate was nearly 50 percent at the beginning of the period, declining to around 35 percent at the end. Health tended to be better in large settlements than in small ones.

Both of these results are contrary to conventional archaeological wisdom. Early agricultural development is usually associated with a decline in human health. In large settlements, health is thought to have been worse because of parasites associated with livestock, stored foods and accumulations of human waste.





UNIVERSITY
OF MAINE
Professor of

Physics and Astronomy

Neil Comins thinks about the world a little differently from most of us.

He began his career studying Einstein's general relativity and doing calculations on black holes and neutron stars. He also helped to design and build instruments to detect gravity waves, or ripples in the fabric of spacetime.

Since coming to UMaine in 1978, Comins has worked with other scientists and students to produce computer-generated

simulations of galaxy evolution. The goal is to understand the spiral arms of our Milky Way galaxy.

But what if the Milky Way hadn't maintained its spiral shape all this time?

"We wouldn't be here," Comins says. "Our solar system was created in our spiral galaxy 4.6 billion years ago. The sun is a second-generation star, which means it and the planets were created from material that had been transformed to their present chemical composition inside another star earlier in the history of the galaxy.

"Stars like the sun form primarily in spiral arms, where there is enough gravity to

pull the gas together. If the galaxy had not maintained its spiral structure, it's unlikely that the remnants of first-generation stars would have been able to condense into a second generation," he says. "The heavy elements necessary for life would have never come together to form a life-supporting planet."

It's those "what if" questions by Comins that have brought the wonders of the cosmos down to Earth. Comins is a pioneer in astronomy education, in and out of the classroom. In the past decade, the widely published author has helped students and the public to discover their universe.

Out of This World

University of Maine
Professor of Physics and
Astronomy Neil Comins
tackles the 'what if'
questions that bring the
wonders of the cosmos
down to Earth

Photo by Toby Hollis

Barred Spiral Galaxy (NGC 1512), image courtesy of NASA, ESA, and D. Maoz (Tel-Aviv University and Columbia University)





Photo by Toby Hollis

“The more we have a scientific understanding of nature, the more we are able to make informed decisions in all aspects of our lives.”

Neil Comins

For Comins, the importance of basic scientific research and sharing general knowledge through teaching and public outreach are not light-years apart.

“Science gives answers that are often inconsistent with common sense,” he says. “The way science works is different than the way most things in our lives operate.”

Thinking Like a Scientist

COMINS CONTENDS that one of the best ways to understand the universe is to abandon common sense. That’s how he greets his readers in the introduction to his book, *Heavenly Errors: Misconceptions About the Real Nature of the Universe*, published last August.

Comins has identified more than 1,700 common misconceptions about astronomy. Many show just how common sense betrays us in our attempt to understand nature.

But it’s science — the use of logic and observation to arrive at the facts — that helps to overcome misconceptions.

Among the misconceptions: the seasons change due to Earth’s varying distance from the sun; Mercury is the hottest planet because it is closest to the sun; spacecraft must dodge boulders when travelling through an asteroid belt; once the ozone layer is gone, it is gone forever.

Comins clears up many misconceptions in *Heavenly Errors*, explaining why the commonly held beliefs are wrong and presenting the correct scientific explanations.

For instance, the change of seasons actually results from the tilt of the Earth’s rotation axis. Mercury’s slow rotation and thin atmosphere cause its night side to become among the coldest surfaces in the solar system. The average distance between asteroids in an asteroid belt is 3 million miles. Once enough harmful compounds are out of the atmosphere, the sun’s energy will rebuild the ozone layer.

He has also established a Web site (www.umefhy.maine.edu/ncomins/) where links offer correct explanations for the misconceptions he doesn’t address in his book.

Comins compiled the list of misconceptions with the help of students in his introductory college astronomy classes in the past decade. Students earned extra credit if they prepared lists of the incorrect beliefs they had before taking the course.

But correcting misconceptions is much more difficult than simply presenting accurate information and expecting students to believe it, Comins says. If students don’t learn how to “think like a scientist,” they will soon “forget what they have learned.”

“The more we have a scientific understanding of nature, the more we are able to make informed decisions in all aspects of our lives,” Comins says.

Cosmos in the Classroom

STUDENTS come into Comins’ introductory astronomy course with a set of beliefs that is often inconsistent with scientific observations. That motivated him to try to figure out how to help students deconstruct their deep-seated incorrect beliefs, and to make them comfortable enough to accept changes in their world views.

“Our natural defenses, our egos, tell us that our beliefs are correct, and finding ways to help overcome those natural defenses became the big challenge. Living with a scientific state of mind makes it easier for me to accept that my own beliefs are not always right,” says Comins.

“In fact, I’m comfortable standing before 250 students — who expect their professors to give them correct information — and telling them that 20 percent of everything I will teach them is wrong. I go on to explain that by the end of the semester, new research

is likely to have overturned some of what we now believe to be true.”

In his classes, Comins shows, rather than tells, students that their beliefs aren't always correct. For example, he starts the semester with a demonstration of how a beach ball can hover in midair. This is entirely unexpected, but easy to understand once the science is explained.

In addition, at the end of each lecture he asks the students to write down the answer to a question for which most people have misconceptions. This activity creates a set of behavioral dynamics, including realizing that they are not alone with their incorrect ideas. It enables them to consider alternative ideas to what they hold to be true.

What If?

THINKING SCIENTIFICALLY, Comins says, gives people the power to formulate new ideas that can be evaluated on their own merits. It was what enabled Comins to develop the series of popular “What If?” articles he wrote for *Astronomy* magazine in the early 1990s, as well as his 1993 book, *What If the Moon Didn't Exist? Voyages to Worlds the Earth Might Have Been*, which has been through seven printings, and has been translated into Hungarian and Japanese.

“(It) all started when one day (University of Maine Professor of Physics) Dave Batuski came into my office and said, ‘We astronomers are looking at the world the same way too much.’ I said, ‘Let’s look at the world differently.’

“My then 5-year-old son James was in the phase of asking ‘what if’ questions. Adults don’t consciously think ‘what if’ questions because we have internalized the process of asking them.”

That’s when Comins decided to ask: What if the moon didn’t exist?

“The implications are staggering, including smaller tides, high winds, days that are just eight hours long, and the unlikelihood that sentient life would exist here,” he says.

In 1995, Comins became the author of the introductory college astronomy textbook *Discovering the Universe* (previously co-authored with William Kaufmann III). By applying his experience in teaching, addressing misconceptions and asking “what if” questions, Comins transformed the volume into one of the best-selling astronomy texts of the 1990s — a position it still holds.

“Many things we do, both as a society and as individuals, require us to make decisions based on our belief systems. This applies to energy policy, stem cell research, education and other social issues,” Comins says. “In each of these realms, the more logically correct and scientifically valid information we have, the more likely we are to make decisions that help society.”

by Gladys Ganiel

Heavenly Errors

IN HIS LATEST BOOK, *Heavenly Errors: Misconceptions About the Real Nature of the Universe*, University of Maine Professor of Physics and Astronomy Neil Comins explores the difference between reality and perception: the differences between how nature really works and our beliefs about how it works. Here are a few of the misconceptions about the cosmos he addresses:

Comet tails trail behind comets.

Comets have two tails and neither trails behind the comet nucleus of ice and rocky debris. The straight gas tail of a comet always points directly away from the sun. The curved dust tail always arcs between the gas tail and the direction from which the comet is coming.

The sun shines by burning gases.

Energy in the form of heat and light is released not by combustion, but by the fusion of 660 million tons of hydrogen per second to form helium. The sun contains no solid or liquid matter; it does not have a “surface,” in the traditional sense.

The sun is a star that gives off yellow light.

The sun is an ordinary star among hundreds of billions in our galaxy. It actually gives off mostly turquoise light.

Stars twinkle.

Stars appear to twinkle because the Earth’s atmosphere is not a uniform gas. By changing the direction of starlight moving through it, the ever-shifting atmosphere creates the impression that stars are twinkling.

Each point of light we see in the night sky is a single, isolated star.

Less than half of the objects we see at night are isolated stars. The rest are pairs or small clusters of stars orbiting each other.

Pluto is always farther from the sun than Neptune.

Pluto’s orbit is so elongated that for about 20 years of its 249 Earth-year orbit around the sun, it is closer to the sun than Neptune. This occurred most recently between 1979 and 1999.

All the moons in our solar system are similar to ours: spherical, airless, with light and dark gray regions, and craters.

At least 84 moons are in our solar system, and fewer than 25 are spherical. The others look more like giant potatoes. Several have measurable atmospheres. Most have either a single hue of gray or a variety of colors, as well as surface features.

The Paper Trail

IN UMAINE'S PULP AND PAPER PROCESS DEVELOPMENT CENTER,

HAVE A NEW IDEA to test? If you're a pulp and paper company in Maine, your first phone call may be to Proserfina Bennett, managing director of The University of Maine's Pulp and Paper Process Development Center in Jenness Hall.

For more than 20 years, the center has conducted research aimed at improving products, processes and environmental quality for the pulp and paper industry. As managing director, Bennett coordinates the center's labs and production facilities, which include a 50-foot-long papermaking machine that can produce 500 pounds of paper a day. Also found in the center are digesters, mechanical pulpers, presses and other devices that turn wood and other fibrous materials into finished paper.

The University of Maine Pulp and Paper Foundation raised the money to build and later expand the facility, which is one of the few in the country that simulates the production process in a modern mill, allowing researchers to efficiently and effectively test new pulp and paper recipes.

As pulp and paper firms have trimmed research budgets, the UMaine center has come to play a more crucial role in developing new technology. The results have been dramatic. In collaboration with a staff of 10 chemical engineering scientists, Bennett has led efforts to develop new pulping and recycling processes that are used in the industry today.

"Because the industry uses large amounts of energy and other resources, even a small improvement can mean a huge dollar savings," she says. "One company told me it is saving \$1 million annually based on a three-day test run in our pilot plant."

Bennett, who earned a UMaine bachelor's

degree in chemical engineering in 1982, is currently working with the DuPont Corp., and Sappi Fine Paper North America, to apply patented laboratory technology to a full-scale paper mill. When her presence is not required in a mill or in the lab, she writes research proposals, interviews potential student employees and keeps an eye on the center's budget.



As managing director of The University of Maine's Pulp and Paper Process Development Center, Proserfina Bennett, pictured right, coordinates the lab and production facilities, where students like chemical engineering major Mike Byrd work with researchers.



PROSERFINA BENNETT MANAGES SUCCESS STORIES

“Dave Kraske, the first director of the center, recognized Proserfina’s leadership ability,” says Joe Genco, the center’s current director and a UMaine professor of chemical engineering. “When she first came to the center in 1984, she did research with Art Fricke on black liquor, the dissolved wood solids that are a by-product of the Kraft pulp-

ing process. As the center grew over the past decade, she gradually took on more responsibilities.”

Initially, the center’s work focused on monitoring systems, checking data, and testing paper or pulp. Today, it is dedicated to improving pulp and paper processes and products.

The center’s annual budget exceeds \$500,000, entirely supported by fees charged to industrial clients.

“We’re particularly strong in pulping and bleaching technologies,” says Bennett. “We help to make better paper. We work with the industry to save money and make it more competitive.”

Bennett also has a role in connecting students with cutting-edge research and real-world applications. She advises the UMaine student chapters of the Paper Industry Management Association (PIMA) and the Technical Association for the Pulp and Paper Industry (TAPPI). She works closely with the four or five students employed at the center each academic year.

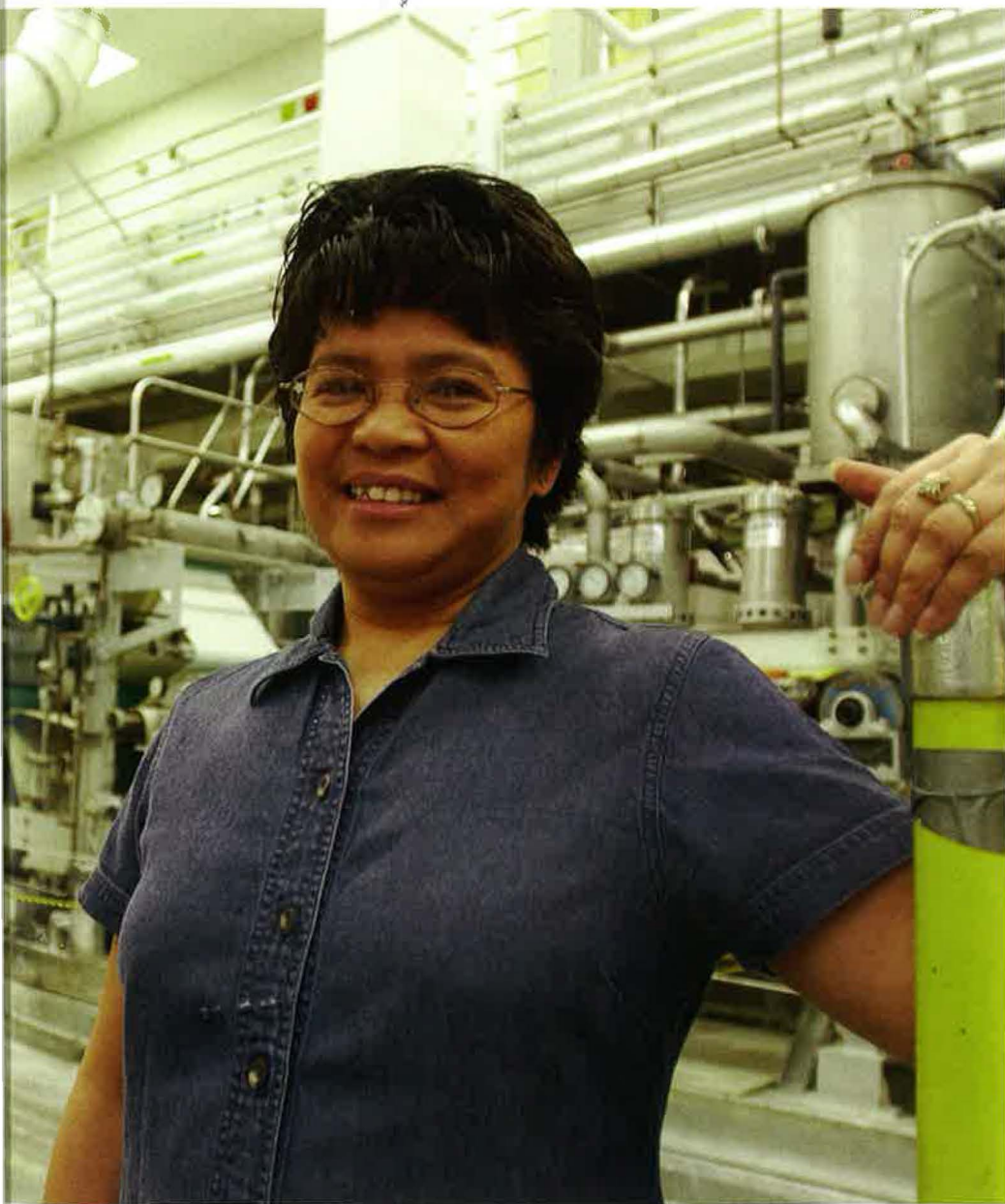
This spring, Bennett will accompany 20 chemical engineering students to the annual TAPPI conference in Atlanta, Ga.

In coming years, some of these young chemical engineers will again work with Bennett. They will be like other UMaine graduates now employed by pulp and paper companies who use the Pulp and Paper Process Development Center to advance the industry.

by Nick Houtman

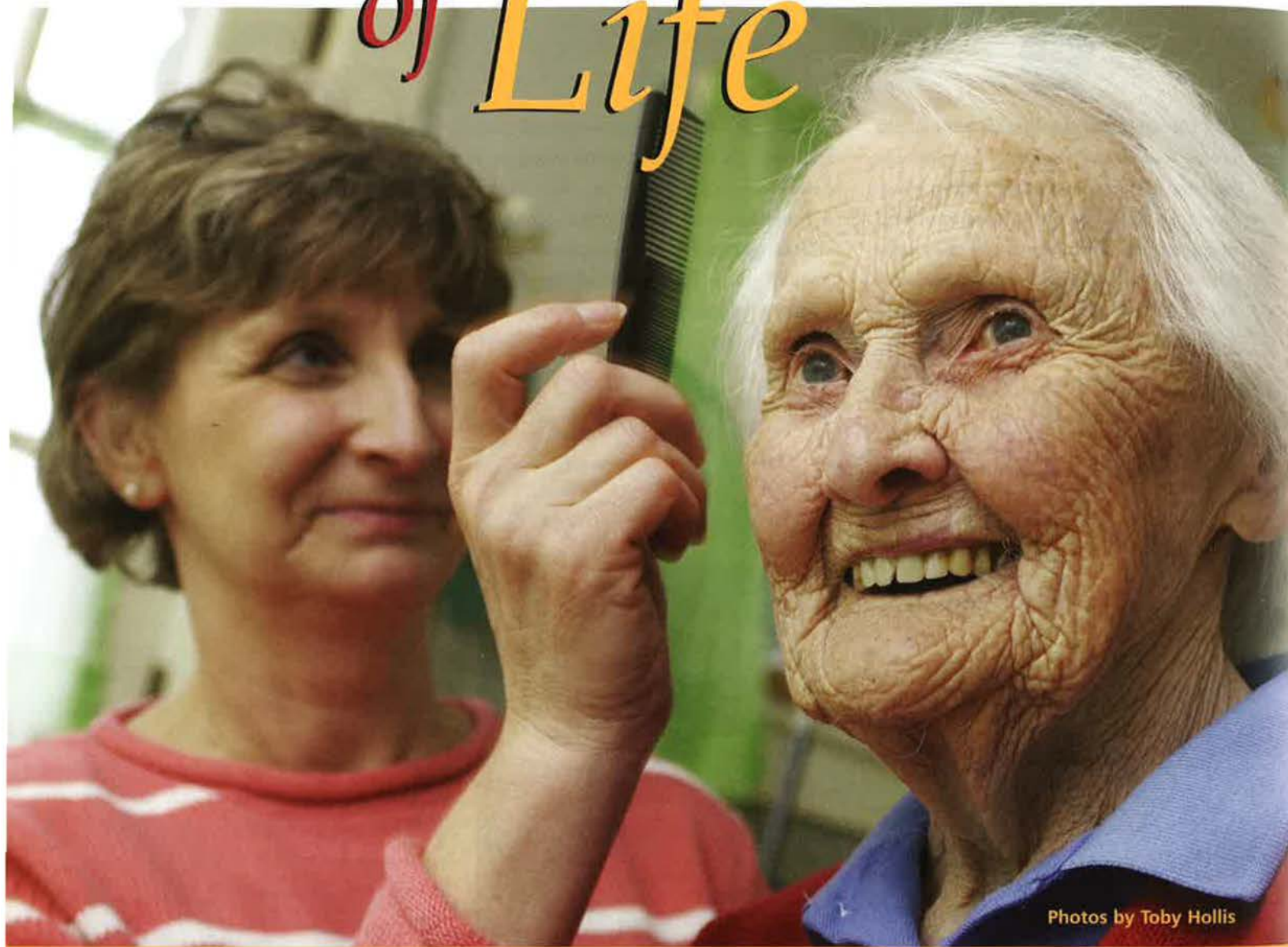
“Because the industry uses large amounts of energy and other resources, even a small improvement can mean a huge dollar savings. One company told me it is saving \$1 million annually based on a three-day test run in our pilot plant.”

Proserfina Bennett



Photos by Toby Hollis

The Quality of Life



Photos by Toby Hollis



UMaine Professor of Social Work and Center on Aging Director Lenard Kaye is a nationally recognized expert in social gerontology. Before coming to UMaine, Kaye was a professor of social work and social research at Bryn Mawr College, and associate director of the Brookdale Institute on Aging and Adult Human Development at Columbia University. He is the author of 10 books.

UMaine's Center on Aging focuses on education, research and community collaboration to address the state's dramatic demographics

AS A NATION, WE HAVE NEGLECTED OLDER ADULTS, according to gerontologist Lenard Kaye. Therapists want to resolve conflicts and physicians want to cure. Social workers want to bring about change — improved quality of life — and that can be difficult to institute when service systems for older adults are nonexistent or incomplete. As a result, the field of gerontology isn't always attractive to those in the healthcare or service professions.

"Allied health professionals, nurses, physicians, psychologists and social workers all have been guilty of steering away from issues on aging," says Kaye, who directs the new Center



Up until a few years ago, Charlotte Buck, 75, was unaware of the community services available to older adults. But even if she had known about the medical, nutritional, financial, household and transportation assistance that ultimately saved her life — her quality of life — the odds are she would not have sought help.

"People are very independent in Maine. It's hard for us to ask for help," she says. "It's much easier to accept an offer" of assistance, as she did from a social worker. ■



Primarily caregiver Jerry Brown, pictured above with his mother, Nellie, 95, advocates for social and attitudinal change concerning the elderly. It can start with the understanding that being a caregiver — and helping to maintain quality of life for older adults — has its rewards, he says.

Often the caregiver role evolves over time, says Gail Leland, a wife, mother of three, businesswoman and primary caregiver for her elderly parents. Gradually, older adults in your family need a little extra help, and you just expand your responsibilities to lend a hand. But as you become a primary caregiver, the needs of older family members get more demanding — and complex.

"The frustration comes when I don't have enough time to do it all. That's why it's important to know agencies to call," says Leland, also the primary caregiver for her mother-in-law, Florence, 94, (pictured with Leland, page 12). ■

on Aging in The University of Maine College of Business, Public Policy and Health. "As a result, those who work with older adults in the community are poorly prepared."

Yet, at the same time, there is a demographic explosion of older adults, Kaye says. Now more than ever, healthcare and service providers must have geriatric training to meet elders' cross-disciplinary needs.

"Health professionals heading into the workplace unprepared for the dramatically increasing numbers have a rude awakening," says Kaye. "That's why the Center on Aging is so crucial. Young professionals

entering the workplace need the skills to do justice to older citizens in the state."

Maine is "older" than most states, Kaye says. Almost 15 percent of the state's population — 200,000 residents — are age 65 and older. As a result, "we're witnessing what the rest of the nation has yet to witness," he says.

By 2020, the elderly population in the state is projected to grow by more than 40 percent, to the point that one in five residents will be age 65 and older, according to the Maine State Planning Office. The fastest growing segment is the "oldest old" — those 85 and older.

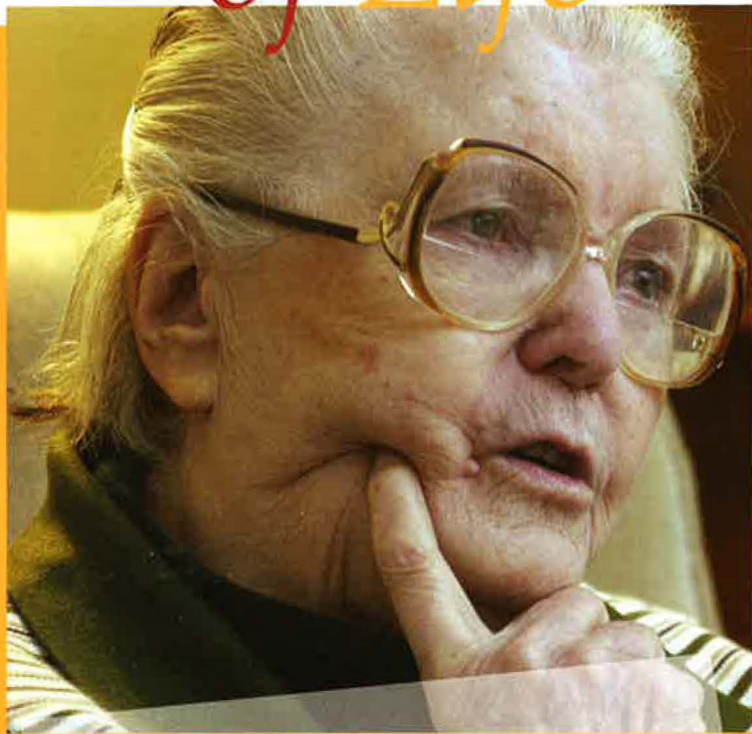
In the "demographic revolution" nationwide, the population of older adults is growing three times faster than that of the young.

The graying population in Maine and across the country is stressing the health and human services workforce. It also is providing opportunities for innovative services and product development. Such a growing population requires expanded and specialized services in all sectors, including education, health and social services, housing, transportation, business and recreation.

UMaine's Center on Aging is one such initiative. The center is dedicated to

The Quality

of Life



Doris Landman, 87, doesn't have time to be lonely. Too many people around her are alone.

As a nurse for 38 years, she learned that older people often are ignored. "Like in this (apartment) building," she says. "There's no one to do for them and talk to them."

Landman spends her days watching out for others. She cooks extra to share a hot meal with a friend. When she and two of her hall neighbors were the only ones on the floor one Christmas, she invited them to her apartment for dinner and a video. She crochets lap robes to keep others warm. ■



Since September, the University's Hutchinson Center in Belfast, Maine, has been the site of a senior college, offering courses for adults ages 55 and older.

"These are enrichment courses, the price is right, there are no tests and you're treated as an adult," says Pat Jones (center). "I thoroughly enjoyed meeting other adults from surrounding communities whom I would never have had a chance to meet or talk to otherwise. I found it really rewarding."

This year, planning is under way by UMaine's Center on Aging to develop a senior college in the Bangor, Maine, area. The expanding array of non-credit courses, developed and taught by older adults, are designed to be a source of empowerment. ■

responding to the needs of a rapidly increasing older population by focusing on the highest quality training, education and practical research that can make a difference.

"We want to build strong relationships with organizations in the local community and throughout the state. That's the best way to serve citizens," says Kaye, a UMaine professor of social work.

The mission of the Center on Aging is to promote and facilitate activities on aging through education, research and evaluation, and community service to maximize the quality of life of older citizens and their families in Maine. Ultimately, it will involve

faculty and researchers throughout the state, as well as older citizens and members of the professional service community. In direct partnership, the center will address a desperate need by preparing professionals and lay people in "best practices" approaches in serving older adults and in better appreciating the contributions of elders.

"We may not be able to control the health of older adults, but one thing we can do is to ensure that people remain engaged, and have a lifeline and support network for some degree of well-being, stability and reason for living. Disengagement happens far more than it should," Kaye says.

Earlier this year, the Center on Aging received a two-year, \$60,000 grant from the John A. Hartford Foundation of New York City to infuse UMaine's School of Social Work curriculum with geriatric content. The same foundation allowed the national Council on Social Work Education to launch a multi-year initiative, Strengthening Aging and Gerontology Education for Social Work (SAGE-SW), to increase geriatric competency of social workers.

Getting gerontology education to social work students is seen as an effective means of addressing the unprecedented demographic changes. "There will be a greater



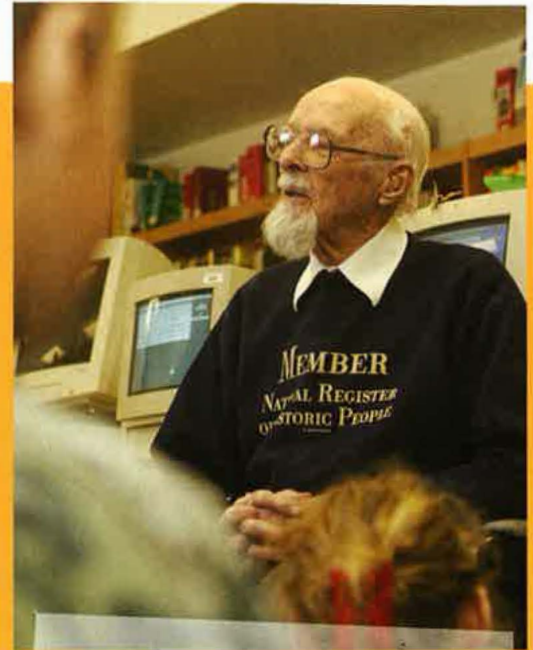
Ben Bouchard, 89, pictured above with Margaret Howe, a family friend, lives in the Franco-American community where he grew up.

Bouchard retired in 1972 after 57 years as a teacher and middle school principal. For more than three decades, he also was an accomplished violinist. Bouchard and his wife, Agatha, 91, (pictured on page 16) have lived in the same home throughout their nearly 62-year marriage.

"I don't feel old," he says, "because I'm keeping busy."

For the past five years, Bouchard's focus has been on Agatha, who has lost most of her eyesight. He keeps a spotless house, makes meals and helps Agatha whenever she needs him, day or night. He even learned how to knit in order to fix any stitches she misses when making afghans.

Bouchard is a member of Nos Histoires De L'Île, a group that organized to do an oral history project and book about French Island, Maine, natives. ■



Ted Holmes, 91, has been a volunteer in the Winterport, Maine, elementary school library since 1989. The well-known Maine author spends three days a week reading and talking to youngsters, reciting poetry, and checking out and reshelving books.

"It fills my time. I like to do something for the community," he says.

School librarian Scott Beede already had two 80-year-old volunteers working with him when Holmes started. "Seniors make great volunteers. They're very dependable," says Beede. ■

need for social workers to use their skills to enhance the quality of life for older adults and their families, and to assist them in navigating ever-changing and increasingly complex health, mental health, social service and community environments," according to *Strengthening the Impact of Social Work to Improve the Quality of Life for Older Adults: A Blueprint for the New Millennium*, a SAGE-SW report released last year.

In addition, says Kaye, we need to be more creative in linking elders with non-monetary services. The infrastructure of our communities and educational system needs to be mobilized, and those segments that

produce goods and services for older people and their families must be retooled.

"We need to educate, train and inform communities and individuals about the graying of the nation, which results in a new set of needs and expectations," he says. "Older adults need to be empowered to take ownership of programs and services."

To succeed, Kaye says, is to see "observable vibrancy in a community that reflects evidence of intergenerational life." Seeing young and old walking the streets of a community is evidence that one age group isn't isolated from another by physical barriers, he says. It signals a healthy community.

"You know it's working when older people are integrated, engaged and respected in a community, enjoying a quality of life that isn't totally determined by financial status."

Research and education on aging issues will aid the state in building a cadre of educators, scientists and other specialists in the field of aging who will apply their expertise.

Community-based research currently under way includes the Maine Primary Partners in Caregiving project, led by Len Kaye, in partnership with Roberta Downey, executive director of the Eastern Agency on Aging. With a three-year, \$600,000 grant from the U.S. Administration on Aging, the

The Quality of Life

CENTER ON AGING

As a society, we need to understand that aging entails loss — from physical and mental capacity to income and financial stability, and social support networks, including the resources needed to interact effectively in the world.

"If we do nothing, we will have a group of individuals that continues not to live the American dream — the quality of life it's capable of having," says University of Maine Professor of Social Work Lenard Kaye. "Everyone deserves a piece of the American dream, regardless of age."

In Maine, older people are particularly challenged by the out-migration of young people. Many are finding themselves in a state of aloneness — physical aloneness — and something needs to fill the gap left by the absence of critical relatives.

"We're not talking about bingo every Friday night. Their needs are as sophisticated and diverse as those of people in any other age group, perhaps more so," says Kaye. "Education needs to be offered. Cultural enrichment and high-quality health services. Home maintenance and housekeeping services. They need more options in home healthcare."

The sense of isolation and the thought of being involuntarily disengaged from community life haunt most elderly, Kaye says. "Key to the concern is that this will happen prematurely."

The goal is not to reach a point when there isn't a single shut-in left in Maine. That is unattainable, Kaye says. Instead, the key is in "notching up" the relative quality of life for older people.



"You know it's working when older people are integrated, engaged and respected in a community, enjoying a quality of life that isn't totally determined by financial status."

Lenard Kaye

researchers are collaborating with agencies on aging and family practitioners in five counties to assess the needs of family caregivers of the elderly and to offer specialized support services. The goal of the project is to show that information, training and support services for caregivers can prevent burnout and improve life for all family members.

The center also is coordinating a Professional Excellence in Geriatrics Series — continuing education sessions designed for professional service providers. The series

features presentations by recognized leaders in geriatric medicine, psychiatry, nursing, social work, law, psychology, therapies, and health and human service professions.

For older adults, the center is planning a senior college for the Bangor, Maine, area. It will feature non-credit courses, developed and taught by older adults, that are a source of enrichment and empowerment.

The community will be formally introduced to the Center on Aging during "A Celebration of Generations" festival in May. Days will be filled with lectures, music,

information sessions and intergenerational programs. The festival is offered in collaboration with the Eastern Agency on Aging and several other groups serving the elderly.

"The idea is to highlight the contributions older people bring to the community — their wisdom, experience and history, and knowledge of the region's culture. We want to honor them," Kaye says.

by Margaret Nagle

An endowment for the Center on Aging is being established in the University of Maine Foundation. For information, call 207-947-5100.



Photo by Toby Hollis

sensors on the high seas

Student engineers contribute to the Modular Advanced Composite Hull-forms project involving composites design, computer modeling and sensor development.

COMPUTER CHIPS AND SENSORS are turning up in unexpected places — saw mills, dairy barns and now, as the result of a University of Maine engineering research project, in the hull of a prototype U.S. Navy ship.

Four undergraduates in the Department of Electrical and Computer Engineering are working on a computerized system that will be embedded in a new generation of ship hulls made of composite materials. The system will keep track of stresses encountered by the hull panels, and alert the crew to problems and the need for maintenance.

Under the guidance of Associate Professor Bruce Segee, the students are programming a computer chip to communicate with standard temperature sensors. They are conducting their study using Internet-related software to gather sensor information and display the data on a Web page.

The work is part of a larger UMaine project known as Modular Advanced Composite Hull-forms, or MACH, led by Vince Caccese, associate professor of mechanical engineering. The U.S. Office of Naval Research provided a \$2.24 million grant in 2001 to develop the composite panels.

Binaya Acharya of Nepal, a junior on the team, says the project gives him and his peers a taste of real engineering practice. "In the classroom, we cover theory and use textbooks," he says. "There is no textbook for this. It gives us an opportunity to tackle a real-life project. We have to write the programs to make the sensors and computer boards communicate with each other."

With built-in wires, sensors and computer chips, the panels are like an electric blanket, says Segee. "We have to make the electronics small and efficient. Our challenge is to develop microcomputer technology to drive the sensors and communicate with the outside world with a minimum number of interconnections."

The goal is to get useful information to the ship's crew. "I can imagine that the bridge might have the equivalent of a gas gauge that starts out in the green, goes into the yellow and eventually into the red to indicate that hull maintenance is due," says Segee.

the principal's office

JULIE DUBE has taken only one semester off from The University of Maine since beginning her undergraduate studies in 1988. Learning to successfully balance multiple responsibilities and schedules proved to be good training for the educational leader.

Now in her second year as principal of Medway Middle School, Dube is among a dwindling number of young educators willing to take on the daily challenges and stress of running a school. Tremendous management responsibilities, fragmented roles, conflicting expectations and high public accountability contribute to an increasing turnover of K-12 principals and superintendents nationwide and in Maine.

In response, UMaine is assisting aspiring and current K-12 administrators like Dube with professional development options, including the state's only doctorate program in educational leadership. After earning a bachelor's degree in education and a master's in literacy, Dube is now pursuing an Ed.D.

"Administration is a rewarding job, but it's like the general practice of education. The assumption is often that we are or should be specialists in everything. The public and policymakers need to respect the position and understand that it takes time to constantly learn new things. And it takes support," she says.

Dube spent her first seven years at Old Town High School, where she taught English and served in her first administrative post as dean of student activities. Then came the opportunity to take over the leadership of Medway Middle School, near her hometown of Lincoln, Maine.

Dube says she enjoys the chance to be innovative and create opportunity, to deal with different types of people and to figure out how to best work toward common goals. Her goal as a principal is to give every student the best possible opportunity to learn and to make learning meaningful. Being organized, well-read and receptive to other people's ideas are key. Shared leadership, she says, is essential.

Dube says she may one day consider a superintendent position, as well as consulting and writing a book on women and school leadership.



Photo by Toby Hollis

the **INSPIRATION** of **Aspiration**

Educator **Russ Quaglia** has **students**
around the world **BELIEVING** in **ACHIEVING**



The National Center for Student Aspirations offers information for educators, parents, volunteers, coaches and students in an effort to make the world a better place for children to learn and develop into well-educated, productive citizens.

RUSS QUAGLIA JUST FINISHED a lively telephone conversation with a Maine high school student about why some teenagers reach their goals and others remain daydreamers.

Then the phone rang again.

This call was from a U.S. assistant secretary of state wondering if research by the National Center for Student Aspirations (NCSA) might be helpful in restructuring the schools of Afghanistan.

“That’s what I’m most proud of,” says Quaglia, NCSA director and associate professor of education at The University of Maine. “We’re a Maine group filling national and international needs.”

NCSA, established in 1995 in UMaine’s College of Education and Human Development, is dedicated to advancing the development of aspirations in the lives of students. The center offers information for educators, parents, volunteers, coaches and students in an effort to make the world a better place for children to learn and develop into well-educated, productive citizens.

Quaglia leads a staff of 12 educational specialists in developing and providing a variety of programs — on topics from mentoring to parental involvement — in 65 Maine schools, and in schools throughout the Northeast, Colorado, Oregon and Toronto, Canada.

Among the many NCSA initiatives: increasing the number of low-income Maine high school students enrolling in advanced placement courses; and helping educators and policy leaders in countries besieged by cycles of violence, such as Northern Ireland, to strengthen students’ aspirations.

In between special projects, the experts produce publications on a range of subjects, from aspirations-building classroom activities to reflective guides for parents.

“Twenty years ago, we were just a vision (of the college). Today, we are the aspirations story,” Quaglia says.

Quaglia started with statewide and national awareness campaigns, spreading the simple messages he fervently believes can change schools and positively influence students’ lives. NCSA’s watershed year was 1998. That March, Quaglia was named to the New England Association of Schools and Colleges Board of Trustees. In May, he teamed with UMaine alumnus and think-tank CEO Doug Hall to co-author a nationally syndicated newspaper column for parents. That August, he was the

lead guest as “The Today Show” launched a series on American education issues.

Quaglia stresses that all children can be productive contributors and achievers in schools, if that is what is expected of them and if they are given support and opportunity.

The essential element — a positive attitude and involvement of educators and other adults — can change the teaching and learning

environment to emphasize the potential of students, not students as a problem, he says. Students need to see the connection between their choices today and their future opportunities.

THE MESSAGE HASN’T changed since UMaine began looking into the link between student aspirations and Maine economic development in the early 1980s. However, the delivery of that message has changed, and Quaglia is the reason.

Quaglia came to UMaine in 1987, fresh out of Columbia University with a doctorate in educational leadership, focusing on organizational change. He began building a multi-dimensional approach to collecting and measuring students’ perspectives

**“Each OF US
has the
ABILITY to
MAKE a
difference
in THE
WORLD
FOR KIDS.”**

Russ Quaglia

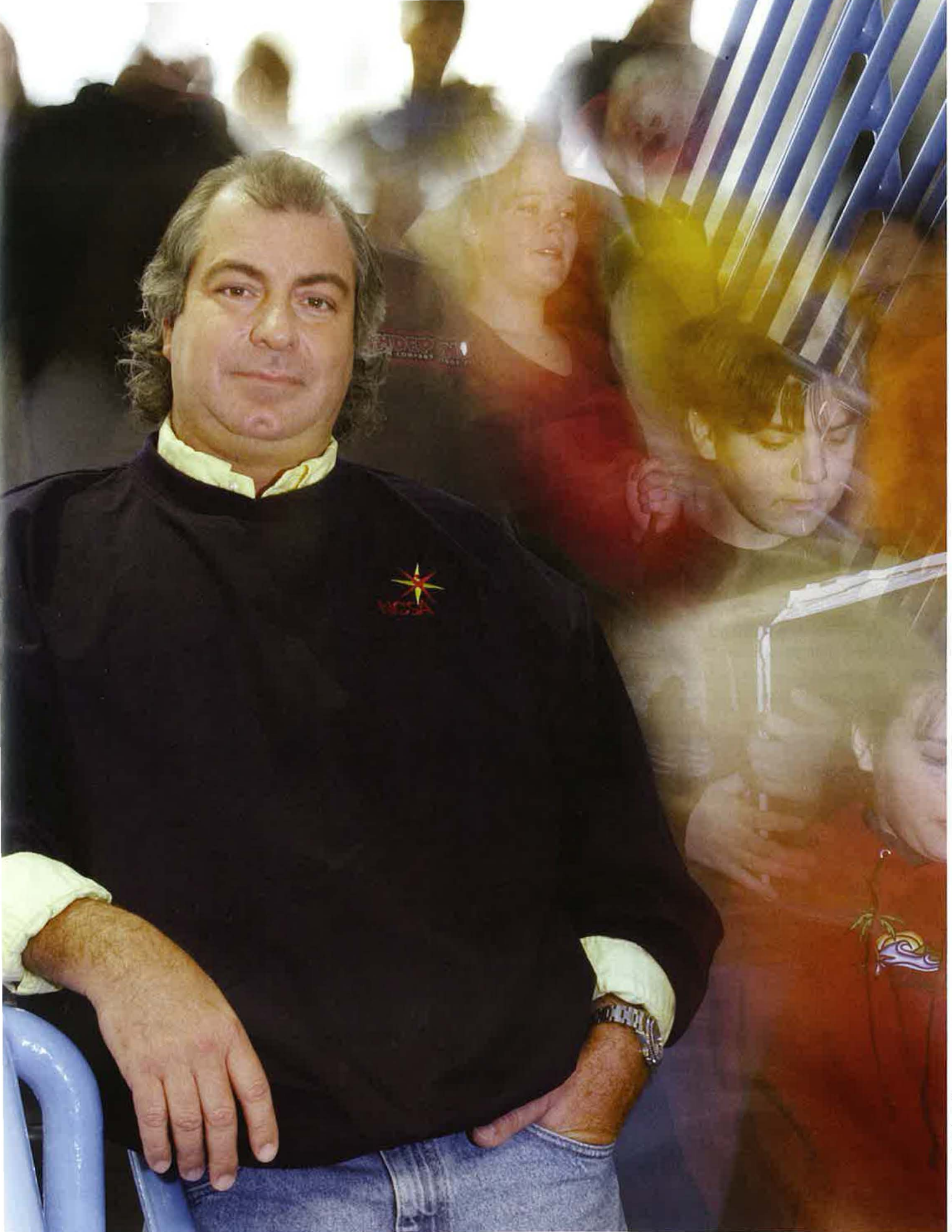


Photo Illustration by Toby Hollis

about their education hopes for the future, support networks and barriers.

Quaglia figured out how to present the voice of students as a valuable indicator of school reform. Today, NCSA is recognized worldwide for its “Eight Conditions” that foster aspiration. They reflect the difference between dreams and aspirations.

- Belonging – Having a sense of self and being a valuable community member.
- Heroes – Having an accessible, real-world role model to admire, respect and seek out for guidance.
- Sense of Accomplishment – Achieving on personal, social and academic levels, and being recognized for doing one’s best.
- Fun and Excitement – Exhibiting genuine enjoyment in activities, and being open to learning and growth.
- Curiosity and Creativity – Wanting to explore why and why not on the journey to understanding.
- Spirit of Adventure – Being willing, and appreciating what it means, to take a risk, to be successful, to fail and to try again.
- Leadership and Responsibility – Expressing ideas and accepting the consequences of one’s actions.
- Confidence to Take Action – Setting high goals and having positive attitudes about working to achieve them.



8 Conditions That Make a Difference

Graphic courtesy of the National Center for Student Aspirations

THE “EIGHT CONDITIONS” form the core of the center’s work and the substance of its survey, “Students Speak: My Education and My Future.” The survey measures student aspirations and provides information for schools based on the perspectives and needs of their students.

Quaglia has fine-tuned and examined the list of conditions in more than 80,000 surveys of students, and outlined how educators, parents and other adults can make them happen in his book, *Believing in Achieving*.

Quaglia travels extensively, meeting and working with educators, leaders and organizations around the world, always focusing on what makes schools better for students.

In Maine, a new 10-year Maine Aspirations Benchmarking Initiative, using the “Students Speak” survey, is expected to generate an unprecedented database of information from Maine students. It will help to establish a national model of how schools can use their students’ perspectives in responsive reform efforts.

“Each of us has the ability to make a difference for kids,” says Quaglia.

“The ‘Eight Conditions’ are in all of us. We just bring them to the forefront and remind people that they have this incredible power.”

by Kay Hyatt

Student perspectives help shape school reform at Freeport High

LONG INTERESTED in the concept of aspirations and effective interventions, leaders at Freeport High School in Maine have worked with the National Center for Student Aspirations (NCSA) for five years.

Freeport is the only high school that has administered the “Students Speak: My Education and My Future” survey three times. Students in grades 8-12 take the survey in two-year intervals, which allows the school to gauge progress and identify new themes of concern to address.

The first survey in 1996 revealed that the senior class registered more negative perceptions of themselves and their learning environment than other students. Educators talked with the seniors, who confirmed that they felt stereotyped as a difficult class and they perceived themselves as second-class citizens,

Further communication revealed that, as a group, the students never effectively dealt with the tragic death of a classmate.

Yet, teachers pointed out that this was a particularly kind class of students who were good caregivers to one another. So why not highlight this positive ability?

The seniors rose to the occasion, establishing Freeport High’s successful mentoring program between 12th graders and incoming ninth graders. The students experienced a greater sense of belonging and community in their school, and felt better about themselves and their class.

“It was a great, proud year,” says Freeport Principal Tom Edwards. “Because the program was so good and positive for the entire school, we have continued it.”

In 1998, Freeport High, like hundreds of Maine schools, administered a survey as

part of the Maine Aspirations Benchmarking Initiative. Levels of feeling positive about learning went up about 30 percent, with significant gains in other categories. But other data presented a red flag.

Almost a third of the students noted that they had been harassed verbally or physically by another student; they often had difficulty learning because of disruptive students in class; and their teachers didn’t always handle these situations appropriately.

The school immediately implemented ongoing interventions.

The March 2001 survey showed some progress in those areas. In addition, the results reflected increased awareness. Overall, the school continues to hear good progress reports from students, teachers, parents and the community.

Partners in Parenting



Photo by Toby Hollis

In Knox County, Extension and the community are making a difference in the lives of teens and their babies



ADRIENNE DESROCHERS

found out she was pregnant two months before graduating from high school. She learned about the Teen Parent Program of The University of Maine Cooperative Extension in Knox County soon after.

“They gave me (educational) handouts about how my body would be changing and how the baby would be growing,” says the now 20-year-old from Rockland, Maine. “It was information I wanted; I didn’t know a thing.”

As voluntary participants in the program, Adrienne and the baby’s father, Del Randall, receive three years of monthly home visits by one of Extension’s two certified parent educators, who support young parents through pregnancy, delivery and their child’s early years.

Six weeks before Zachary was born, one of the Teen Parent Program’s volunteers, Roberta Walker of Camden, Maine, also came into Adrienne and Del’s lives.

“Things would be rougher without her,” says Desrochers. “She has children and grandchildren, and she talks about how it was when her kids were growing up. It makes me hopeful that things in my life will get better.”

Walker got involved with the Teen Parent Program because she was “fascinated by the potential to help young families get off to a good start.”

“Adrienne knows she’s important to me and that I’m someone she can count on,” says Walker, who also serves on the Teen Parent governing board. “I offer words of encouragement and reinforce the positive.”

The Teen Parent Program, begun in 1989 and supervised by Extension Educator Nadine Reimer, is designed to improve the lives of young, first-time parents and their children by providing education and mentoring. The program is based on the premise that parents are children’s most influential teachers.

In 1994, there were 75 births to girls ages 17 and younger in Knox County, according to Maine’s Bureau of Health. However, in 2000, there were 24 births to teens.

Today, more than 25 pregnant or parenting teens ages 15-22 are participating in the Teen Parent Program. They are assisted by certified parent educators in Extension and 20 trained volunteer mentors like Roberta Walker.

In 1997, the Teen Parent Program was selected as one of five national models by the USDA’s Children, Youth and Families At-Risk Initiative, based in Washington, D.C. The Knox County initiative was cited for its community building and networking for teen parents.

The program has a governing board of 15 community members, including a pediatrician, nurse midwife, artist, registered nurses, teen mother and several trained volunteers.

“My focus is on the success of the babies and on the prevention of second pregnancies that can send the moms into poverty,” Reimer says. “We are able to make real-life, human connections, offering the moms and dads opportunities to see a different life for themselves and their children.”

by Margaret Nagle





Hearing right from the start

The Centers for Disease Control and Prevention encourages all hospitals to adopt universal hearing screenings for children under 1 month old

KEEPING at-risk children in Maine in the healthcare and social services systems to give them the help they need is one of the goals of a \$1.45 million research project at The University of Maine, funded by the Federal Office of Rural Health Policy, part of the Health Resources and Services Administration.

The program, Child LINK (Linking Information Networks), is part of UMaine's Children at Risk Project. It begins with newborns at risk for hearing impairments, focusing on early detection and treatment for these children who, without intervention, could face developmental delays.

Child LINK designs and electronically links child health and development databases for the state. The result is integrated information providing the most comprehensive picture possible about Maine children with special needs. With that information, the state can better track and evaluate the development of these children, and above all, ensure that they get the services they require.

"More than 13,000 children are born every year in Maine. The database will help us focus attention on the children with hearing impairments who may benefit most from available services," says Craig Mason, UMaine associate professor of interdisciplinary studies and director of Child LINK.

"The database will give us a better understanding of the challenges these families face and what can be done to help. We will get a sense of where these children are falling through the cracks, and what can be done to fill those cracks in the system."

Starting this year, information concerning infants being screened and evaluated for hearing disorders, and those youngsters being referred to intervention and treatment services, will be entered in the database. The data will form the foundation of a tracking system in Maine's Newborn Hearing Program.

With the tracking system, healthcare and social services providers can effectively plan and establish a comprehensive system of developmentally appropriate services for newborn children and infants up to age 3 who are deaf or hard-of-hearing. Access to the database is regulated by the Bureau of Health.

The core of the database is modeled on recommendations of the Centers for Disease Control and Prevention (CDC). "With our expanded approach, we are on the cutting edge of what the CDC is trying to do," Mason says.

Help with the Herds

DAIRY COWS don't take a day off, but sometimes their owners have to. That's when The University of Maine Cooperative Extension Relief Milker System can help.

A relief milker is trained to step in to milk a dairy herd, giving a farmer a break from chores that have to be done at least twice a day, seven days a week, 365 days a year. Relief milkers can give farmers time off and backup during emergencies, relieving a shortage of labor on Maine farms.

"It's a schedule that can take its toll on farmers and their families," says Extension dairy specialist Dave Marcinkowski. "There is little or no time for illness, doctor's appointments, educational opportunities or

even just a break from the farm."

People who want to become relief milkers attend daylong training sessions at the University's Witter Animal Science Center to learn the basics of milk production and how to care for and milk cows on today's modern dairy farms. Relief workers are 16 and older, and come from all walks of life, including students and retirees.

The training is supported by Maine's dairy processors, including Agri-Mark, Oakhurst and Garelick.

About 450 families operate dairy farms in Maine.

The statewide network of relief milkers is compiled in the Maine Relief Milker Directory, which is available on the Web (www.umaine.edu/livestock) or by calling a county Extension office.



National Masters Championships

THE USA TRACK & FIELD National Masters Championships are again coming to The University of Maine.

Aug. 8-11, more than 1,000 men and women, ages 30 and older, are expected to compete in track and field events at UMaine's Clarence Beckett Track and Field Complex.

The championships were last held at The University of Maine in 1998. Athletes from 48 states and 10 countries competed.

At that time, 41 American Masters records and nine World Masters records were set at the University.

The athletes were accompanied by more than 2,000 friends and family members, most staying four to eight days in Maine. It's estimated that the event gave an almost \$2 million boost to the regional economy.

Cold facts about fats

TODAY it's hard to be health-conscious without being aware of ongoing concerns about the effects of saturated and unsaturated fats on the body. At The University of Maine, basic research by Theresa Grove, a Ph.D. candidate in the School of Marine Sciences, may have implications in future biomedical research on how the body uses fats.



Grove is attempting to unlock the molecular mysteries behind an enzyme that appears to play a major role in the oxidation of fatty acids in Nototheniid fish. The fish, native to the Southern Ocean surrounding Antarctica, have a pronounced tendency to oxidize unsaturated fatty acids for energy. Mono-unsaturated fat in cardiac and aerobic skeletal muscles is used,

even with both saturated and unsaturated fatty acids present.

Using biochemical and molecular techniques, Grove is studying the structure of the protein fatty acyl CoA synthetase to begin to learn how it may recognize fats by differential specificity, and how it functions at these cold physiological temperatures.

The Peoria, Ill., native is part of a research group, led by UMaine Professor of Marine Sciences Bruce Sidell, that studies Antarctic fish to learn how the species evolved to thrive in an extreme environment. Sidell's research, ongoing for more than two decades, has interested medical researchers seeking to understand how cells respond to stress, which includes life in a formidable climate.

When getting **D's** is a good thing

EXPOSURE TO THE SUN isn't all bad. In fact, a little sunlight every day is good for your bones.

As part of an osteoporosis research project, scientists in The University of Maine Department of Food Science and Human Nutrition are looking at how much vitamin D, a critical factor in bone health, is generated by the skin in response to sunlight.

Their results emphasize the importance of a diet including adequate amounts of vitamin D and calcium, especially during the winter.

Susan Sullivan, assistant professor, and Jennifer Cobb, a master's student from Kingfield, Maine, are focusing their efforts on adolescent girls. Research has shown that the

foundation for healthy bones is established in adolescence. Inadequate bone mass in these early years can contribute to osteoporosis later in life.

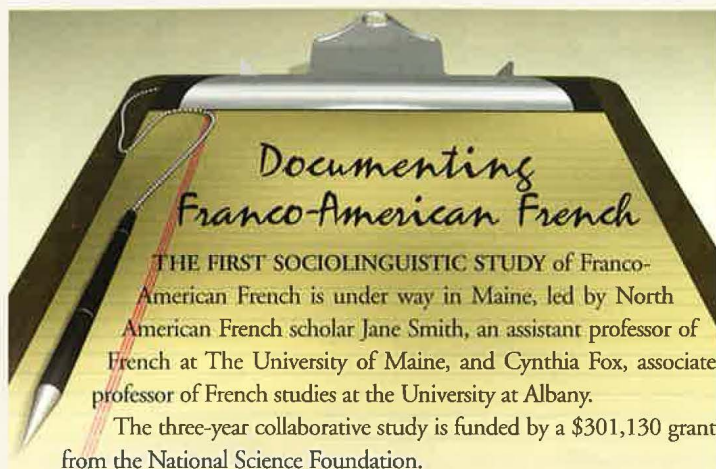
Vitamin D, which is necessary for calcium absorption, is produced by the reaction of sunlight on the skin during the summer. However, the light is not strong enough to do the job during the fall and winter. Even on a summer day, Sullivan says, clouds can cut in half the production of vitamin D.

Sullivan and Cobb, who began their project in 2000, are working with other scientists in the United States and Australia. Their goal is to understand how sun exposure, exercise and diet contribute to strong bones by providing

adequate levels of bone-building vitamin D and calcium.

The researchers found that girls who spend more time outside in the summer have more vitamin D in their blood. However, at Maine's latitude, the sun is not strong enough until mid-March to kick off the vitamin D production process. Even on a sunny day in August, the sun isn't strong enough to start vitamin D production until about 9 a.m.

Sullivan and Dr. Clifford Rosen of the Maine Center for Osteoporosis Research and Education in Bangor, Maine, are now collaborating on a three-year study in which the researchers are closely monitoring girls' diets, bone density and time spent outdoors.



Franco-Americans in New England and New York state represent the second largest concentration of French speakers in the United States. Yet they remain the only significant group of North American French speakers for whom there is no body of recordings preserving the spoken word. Until now, their language has not been the subject of systematic, representative sampling and research.

In the sociolinguistic study, the researchers are investigating linguistic structure and "the human dynamics behind the language" to understand what social or economic factors influence language maintenance or shift.

Their research, based on interviews with Franco-Americans, will explore such areas as family background, linguistic history, ties with French-speaking Canada and France, and participation in ethnic activities. They also will study dialect variations between Quebec and Acadian French in Franco-American French, as well as the influence of English on the language.

In addition to providing baseline data on the sociolinguistics of language choice and change in eight Franco-American communities, the project will create a permanent linguistic record of the largely undocumented variety of North American French.

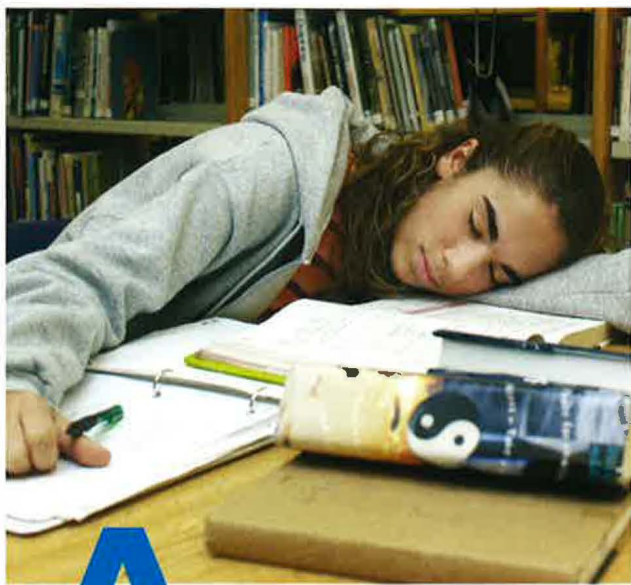


Photo illustration by Toby Hollis

A sleep at the school bell

Addressing the problem of sleepy teens is not as simple as adjusting the start of the school day

TWEEN STRUGGLES to get up in the morning and stay awake in school have more to do with science than with stereotyping. Research shows that adolescents generally benefit from sleeping later because the biological changes of puberty favor morning sleep.

However, addressing the problem is not as simple as adjusting the start of the school day, according to a recent report from The University of Maine.

A study by the Center for Research and Evaluation in UMaine's College of Education and Human Development compiled information from existing reports and data from eight urban and suburban schools in Minnesota that have altered the start of classes to accommodate sleepy students.

In her report, UMaine Research Associate Gail Downs

points out that schools need to approach such changes cautiously and comprehensively, and be aware of possible consequences and complications that vary from community to community.

Decisions whether to change the school day must be balanced against other factors, including how the time shift will affect sports and other after-school activities, students' afternoon jobs, family routines, teachers' lives, bus transportation and the use of school facilities by community organizations.

The study emphasizes that changing the time of the opening — and closing — school bell must be a local decision, made with the participation and input of the community after extensive communication and candid discussion of all concerns and benefits.

Peaceable Kingdom

A LONG-HELD IDEAL portrays Canada as the peaceable kingdom. While historians have identified hundreds of disturbances in the northern nation during the 19th century, only a few have received scholarly attention.

"Throughout history, and even today, a peaceful Canada is held up in contrast to a violent America," says Scott See, University of Maine Libra Professor of History. "However, the desire to believe in this ideal often obfuscates history."

In his research on the history of social and political conflict in British North America (Canada), See has found that Canada in the 19th century was a "fairly rambunctious place." Important categories of collective disturbances — riots and group conflicts — include movements in opposition to immigration (nativism), vigilantism, political turmoil, racial conflict and labor struggles.

"Canadians were rioting and publicly contesting issues on a scale that easily mirrored events in the U.S. and Britain in the same period," says See, who recently received a competitive Senior Fellowship from the Canadian Embassy to complete research on a book on collective violence in 19th-century Canada.

"One of my scholarly contributions might be that people will rethink the peaceable kingdom ideal, which has done such a disservice to an accurate rendering of Canadian history," says See, a member of UMaine's multidisciplinary Canadian Studies Program, the strongest of its kind in the U.S.

"I would also like to think that by gaining a greater understanding of collective violence in history, we increase the likelihood that the future will be less contentious."

Competing in a concrete canoe



UNDER THE THEME "ROCK AND ROW," a University of Maine team of civil and environmental engineering students is entering a sleek 20-foot boat in this year's regional concrete canoe competition, sponsored annually by the American Society of Civil Engineers.

"We've been experimenting with a variety of concrete mixes using lightweight ingredients and a composite reinforcing mesh," says Robert Pontau, a senior from Wiscasset, Maine, and a member of the team. "We hope to break some records this year."

The winner of the event will join other regional competition winners at the national concrete canoe competition at the University of Wisconsin in June.

A dozen colleges and universities in New York and New England are expected to participate in the regional competition, being held this year at UMaine, April 26–27.

Funds to support the team have been provided by seven Maine engineering firms, as well as civil and environmental engineering alumni.

In addition to competing in five races, the students will write a paper describing their design, create a display and give an oral presentation before a panel of judges.



Margaret Chase Smith, 1950
Photo courtesy of the Margaret Chase Smith Library,
Skowhegan, Maine



THE UNIVERSITY OF MAINE'S Margaret Chase Smith Center for Public Policy is named for the Skowhegan, Maine, native who became one of the country's greatest stateswomen. Starting with a special election in 1940, Margaret Chase Smith's Congressional career spanned 33 years — the remainder of her late husband's term in the U.S. House of Representatives, followed by four full House terms. In 1948, she won election to the first of four U.S. Senate terms, becoming the first woman in American history elected to both houses of Congress.

Perhaps the most memorable act in her political career was her 1950 "Declaration of Conscience" speech, when she became the first senator to publicly denounce Sen. Joseph McCarthy's tactics in his campaign against communism. Her courageous stand, in a time of fear and suspicion, was a turning point in the nation's attitude toward "McCarthyism."

In 1964, Sen. Smith, a Republican, became the first woman to have her name placed in nomination for the presidency by either of the two major parties. Sen. Barry Goldwater won the nomination.

The University of Maine recognized her lifelong commitment to public service when it created the Margaret Chase Smith Center for Public Policy in 1989. The nonpartisan, independent research and public service center has a mission to improve and promote the quality of public dialogue about state, regional and national policy issues.

Sen. Smith died in 1995 at age 97.

In each issue, "Lasting Impression" features a memorable person or event in UMaine history.



A place to call home

THE OFFICIAL RIBBON CUTTING ceremony for The University of Maine's "new front door," the Robert D. Buchanan '44 Alumni House, will be May 31, 2002, part of Reunion Weekend.

The new \$7.3 million facility, funded entirely by private and corporate donations, will be "a place to call home" for all UMaine alumni. It will house the offices of the University of Maine Alumni Association and the University of Maine Foundation.

The three-story building also will house the new

UMaine Visitors Center, meeting and reception areas, and an alumni library and museum.

Gifts and pledges to the project included \$2 million from 56 reunion classes. More than 13,000 UMaine alumni donated to the project — more alumni than have given to any campaign in UMaine history.

Alumni House is named for Dr. Robert Buchanan, a member of the UMaine Class of '44, who donated \$1 million to the project. Buchanan is a retired dentist who grew up in Caribou, Maine, and now lives in Whittier, Calif.



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