College of

Agriculture and Life Sciences

NEWS

Summer 2005

Telling Lies Online and Off

Also inside

Cornell's Maple Program

Nitrogen Pollution Threatens Coastal Waters

Nanotechnology Offers Insights into Plant Pathology

Cornell University

Cornell University Undergraduate Business Program

For Generations

The Best in Undergraduate Business

Their path to the top of the business world started at Cornell. In a department many considered to be the unlikeliest of places to develop world-class business acumen.

Ag Econ, ARME, now Applied Economics and Management. No matter what they call their undergraduate major, our 10,000 alumni are leading businesses around the globe.

Their success is our success.

No wonder Cornell's Undergraduate Business Program has earned the reputation of a distinctive program that ranks among the best of the best.

For information:
business.aem.cornell.edu | 607-255-4695
aemug@cornell.edu | Warren Hall
Department of Applied Economics and Management
College of Agriculture and Life Sciences

"Cornell's Undergraduate Business Program provides a functional and pragmatic education. That, in combination with a caring faculty, gave me confidence that I could succeed at any business endeavor."

Patrick Mulcahy '66, MBA '67
CEO
Energizer Holdings

"Cornell's Undergraduate Business Program taught me the practical knowledge I use every day to solve real-world business challenges. The faculty served as excellent mentors, providing me with the confidence to meet the demands of the corporate world."

Lynn Calpeter '86
Executive Vice President & CFO
NBC Universal

"Involved alumni. Accessible professors. A flexible curriculum. Other institutions use the same buzz phrases, but few actually deliver. Cornell's Undergraduate Business Program does—I can prove it."

Ronald Mateo '96
Managing Director, High Yield Bonds and Credit Derivatives Trading
Citigroup Capital Markets

"Cornell's Undergraduate Business Program gave me the business skill set, liberal arts perspective, and confidence so I could deliver on Day 1 in the real world. The business leaders I met in the classroom are the foundation of my business network."

Elizabeth Everett '97
Institutional Credit Sales, Global Markets and Investment Banking
Merrill Lynch

Pictured Alumni (top left to right): Mark Tatum '91, Kelly Joan Brown '88, MBA '92, Elizabeth Everett '97, Lynn Calpeter '86, Ronald Mateo '96, Patrick Mulcahy '66, MBA '67

Summer 2005

Features

Maple Syrup's Sweet Success

Departments

On The Cover:
Jeffrey Hancock, an assistant professor of communication, studies the language people use when telling lies.

Message from the Dean

I was fortunate to be able to launch the college's second century by spending the month of January in Asia exploring university collaborations and partnerships, visiting Cornell and CALS alumni, talking with current and prospective students, and celebrating the college's years of accomplishment in the region. I visited coffee and dairy operations and met with leading rice researchers, scientists, and industry spokespeople. The last CALS dean who visited Asia was David Call '54, MS '58, PhD '60, 25 years ago, when the college was celebrating its 75th birthday.

This trip was well timed in view of the administration's call to reinvent Cornell as a university that is fully engaged in addressing the needs of our global society. The trip deeply impressed upon me the importance to the world of land-grant research universities like Cornell. I saw immense need for increased technical competency and great potential for the economic growth that could result from it.

Asia is both an emerging market and an emerging producer. In both dimensions, we need to better understand how we can work together to impact food, human health, and agricultural production around the world.

Peter Henry

Guoqiang Tian (right) of the office of government relations of the Chinese Agricultural University accompanied the dean on her tour of the Great Wall of China, in Beijing.

China

When it comes to agriculture, scientists from the college have taken a leading role in making Cornell a global land-grant university for over 80 years. Working with scientists from around the world, and using both traditional plant breeding techniques and cutting-edge genomics, we have improved nearly all of the world's important food crops, particularly rice. We have increased yields, boosted nutritional content, improved environmental tolerances, and increased resistance to diseases and pests.

My itinerary took me many places. On January 13, I joined the students, faculty and staff of CALS' International Agriculture 602 class in Coorg, India. From January 15 to 21, I went to Bangladesh to attend a committee meeting of the USAID National Research Council on which I serve, which was the initial impetus for the trip. From there, I went on to stops in China, Hong Kong, and the Philippines, finally ending the trip with an alumni gathering in Hawaii on February 6.

At universities throughout the region, including the Indian Institute of Science, Peking University, Shanghai Jiao Tong University, the Chinese Agricultural University, and the University of the Philippines' Los Baños (UPLB), I gave talks on Cornell's initiative in the new life sciences and my research in molecular genetics. I held several meetings with vice chancellors of leading institutions, and visited scientists in labs, greenhouses, and fields at 11 different agricultural and research universities, including the International Rice Institute (IRRI) in Los Baños, with whom CALS' faculty have ongoing projects in rice breeding and genomics.

India

I started the trip in much the same way it ended: by signing a memorandum of understanding (MOU). The first MOU was with S. A. Patil, vice chancellor of the University of Agricultural Sciences, in Dharwad, India, on January 11; and the second with Augusto C. Sumalde, vice chancellor for Research and Extension, at the UPLB, on February 1. The agreements we signed will facilitate the exchange of students, faculty, and technology and the joint development of new answers to serious challenges in the realms of food security, nutrition, and environmental protection.

CALS' longstanding relationship with

Peter Henry

A martial lion sits in front of the Gate of Supreme Harmony, in the Forbidden City, in Beijing.

康奈尔与中国

尔来百年合作　而今顺时推势

Translation: Cornell and China, building on a century of collaboration

the UPLB dates back to the early '50s. In the first of two major projects that extended from 1952 to 1972, Cornell helped Filipinos rebuild the College of Agriculture, which was nearly destroyed during the war. The second project, from 1963 to 1972, focused on graduate education of American, Filipino, and other Asian students.

Today in Asia, CALS leads the Agricultural Biotechnology Support Project II (ABSP II), an extensive public-private-public partnership focused on applying agricultural biotechnology to problems that limit food crop production. Projects include developing eggplant that is resistant to fruit-and-shoot borer, a multiple-virus-resistant tomato, and papaya that is resistant to papaya ring spot virus (PRSV).

College faculty are very involved in ABSP. Ronnie Coffman PhD '71, director of International Programs at CALS and chairman of plant breeding, is co-director, and the research to develop PRSV-resistant papaya was conducted by Dennis Gonsalves when he was a faculty member in plant pathology at Geneva, for which he received the Von Humboldt Award in 2002.

W. Ronnie Coffman

The dean discussed the ABSP papaya project with Desiree M. Hautea (right), the director of the College of Agriculture–Institute of Plant Breeding, at the University of the Philippines, Los Baños.

W. Ronnie Coffman

The dean met with the students, faculty, and staff of Cornell's International Agriculture 602 class, in Coorg, India.

Philippines

Coffman accompanied me in India and the Philippines. Catheryn Obern, director of International Affairs, accompanied me in Hong Kong and the Philippines. And my husband, Peter, actively participated in interactions with Cornell alumni and friends throughout Asia and Hawaii.

I owe a great debt of gratitude to so many people for facilitating the trip, particularly the many academic colleagues and collaborators, and the Cornell alumni and friends who hosted events and met with me. You are too numerous to list, but, without your help, the trip would not have been possible.

I am enthused by the opportunity for further collaboration with our Asian partners and look forward to the role the college's faculty, staff, and students will play in meeting the challenges of our second century, together.

—Susan A. Henry, PhD, the Ronald P. Lynch Dean of Agriculture and Life Sciences

Short Reports

New Life Sciences Building Takes Root on Tower Road

dbox for Richard Meier & Partners Architects

A computer-generated photo of the Life Sciences and Technology Building to be completed in August, 2007

As the earth warmed this spring, there was much more than the usual stirrings of new life along Tower Road. The new Life Sciences Technology Building began to sprout from the ground, on its way to becoming the largest life-science research facility in the state.

Situated at the west end of the Robison Alumni Fields facing Corson-Mudd Hall and the Biotechnology Building, the 250,000-square-foot structure will serve as the campus's major point of convergence for hundreds of faculty members from as many as 60 departments representing the biological, physical, engineering, computational, and social sciences. The newly created Cornell Institute of Molecular and Cell Biology will reside there, as will the Department of Biomedical Engineering, a universitywide unit.

"A tremendous range of high-quality programs for research and teaching will be housed in this building," said CALS professor Stephen Kresovich, the newly named vice provost for life sciences, a plant biologist and plant geneticist who chairs the planning committees for both the Life Sciences Technology Building and for campuswide scientific infrastructure. "It will greatly facilitate the interchange of ideas between life scientists and the physical scientists, computational biologists, and biomedical engineers who are developing the technologies needed to pursue the biological questions of the 21st century."

Extensive research space on each of four floors will be arranged in flexible laboratory suites designed to enable contact and collaboration. A business incubator for biotech start-ups will occupy a section of the third and fourth floors. A two-story learning center extending west from the center of the building will contain a cafe, conference room, lecture hall, and teleconferencing facility. Large spaces will be dedicated to housing plants, animals, and a biophysics imaging and microscopy facility. Tunnels will connect the building to Plant Sciences and Biotechnology.

CALS will be a major tenant of the Life Sciences Technology Building. More than 275 of the college's faculty members in more than a dozen departments are working in the life sciences, and the college has recruited nearly half of the faculty hired so far for the New Life Sciences Initiative, a $600 million program spanning seven colleges. This initiative to position Cornell on the leading edge of life sciences exploration grew out of the work of the Genomics Initiative Task Force, a cross-campus faculty committee spearheaded and chaired by Steven Tanksley, the Liberty Hyde Bailey Professor of Plant Breeding.

Funding for the $140 million building, which was designed by architect Richard Meier '57, is being raised primarily from private sources, and many naming opportunities exist. The State of New York has provided $25 million for the project. The building is scheduled for completion in August, 2007.

Jeannie Griffith

IPM Trac© Software Gives Fruit Farmers a Competitive Edge

The New York State Integrated Pest Management Program (NYS IPM) has tested and released Trac© software for apple and grape producers that could give growers a greater competitive edge in today's market.

Different records are required by each agency a farmer must report to, such as the U.S. Environmental Protection Agency (EPA), New York State Department of Environmental Conservation (NYS DEC), and processors. When time is money, recordkeeping can be expensive.

"Some agencies require one piece of information that others do not," said Juliet Carroll PhD '95, senior extension associate with NYS IPM specializing in fruit. "Some even want information as detailed as the weather conditions at the time of pesticide application."

Trac© Spray Record-Keeping and Reporting Software is a Microsoft Excel-based program that allows farmers to enter their pesticide usage data into a worksheet. The program will then automatically create report forms required for specific buyers and processors.

Two versions are currently available, TracApple and TracGrape, with two more called TracBerry and TracStoneFruit on the way. The programs were developed to take into account the specific EPA and NYS DEC pesticide standards set for each fruit. The software is updated annually with help from the entomology, plant pathology, and horticultural sciences departments at the New York State Agricultural Experiment Station in Geneva. Carroll reviews and revises the software according to the latest EPA and NYS DEC pesticide registrations, which allows growers to keep up-to-date records of yearly spray histories, maintain EPA worker protection records, and analyze pest management strategies with ease.

NYS IPM first produced and tested TracApple in 2003, following many grower requests to make a recordkeeping program available. This piqued the interest of grape growers, who got their own TracGrape in 2004.

Growers almost instantly reaped the benefits of the program. Apple growers have been able to produce complicated audit reports in a matter of hours. One grape juice processor claims Trac-generated reports saved 25 percent of the time he normally took to process grower reports.

Ultimately, Carroll hopes the software will lead to growers becoming better business managers of sustainable farms with a clear outlook on IPM.

Funding for the project has been provided by the New York State Department of Agriculture and Markets, and the New York Wine and Grape Foundation. Carroll's Trac Software development projects are part of the NY Agriculture Innovation Center, an initiative of the NY Farm Viability Institute, which is supported by a grant from the USDA Rural Business-Cooperative Service. The software is available through NYS IPM for $20. For more information, contact Juliet Carroll at 315-787-2430 or jec3@cornell.edu.

TracGrape©

Laura Borden '05

New Agricultural Science Major Ready to Bloom

Cornell has been the standard-bearer for agricultural education, extension, and research for at least 100 years, but the students who come to CALS to train for a future in farming or a related field can have a hard time picking one another out of the crowd in Mann Library.

That situation is set to change. At the request of Dean Susan Henry, a broad-based team of CALS faculty has developed the curriculum for a new major in agricultural science. Subject to final approval by the State University of New York and the State Education Department, it may become an official program as early as this fall, says Donald Viands, associate dean and director of academic programs and a professor of plant breeding and genetics, who chaired the curriculum task force.

"According to the most recent *Gourman Report*, we're the number-one agriculture college in the country," Viands notes. "We have a spectacular set of undergraduate curricula. By having an agricultural science program that's more visible instead of being dispersed across a lot of departments, I think we can do a better job of attracting students, not only from New York State, but from all across the country." For those in New York, articulation agreements will ensure the seamless transfer of students from other SUNY colleges, particularly those enrolled in the two-year agriculture programs at Cobleskill and Morrisville.

Another group of students Viands and the committee want to attract are those interested in a career in agricultural extension. "There hasn't been anything visible to let students know that there is such a thing as a career in extension or in crop consulting," he explains.

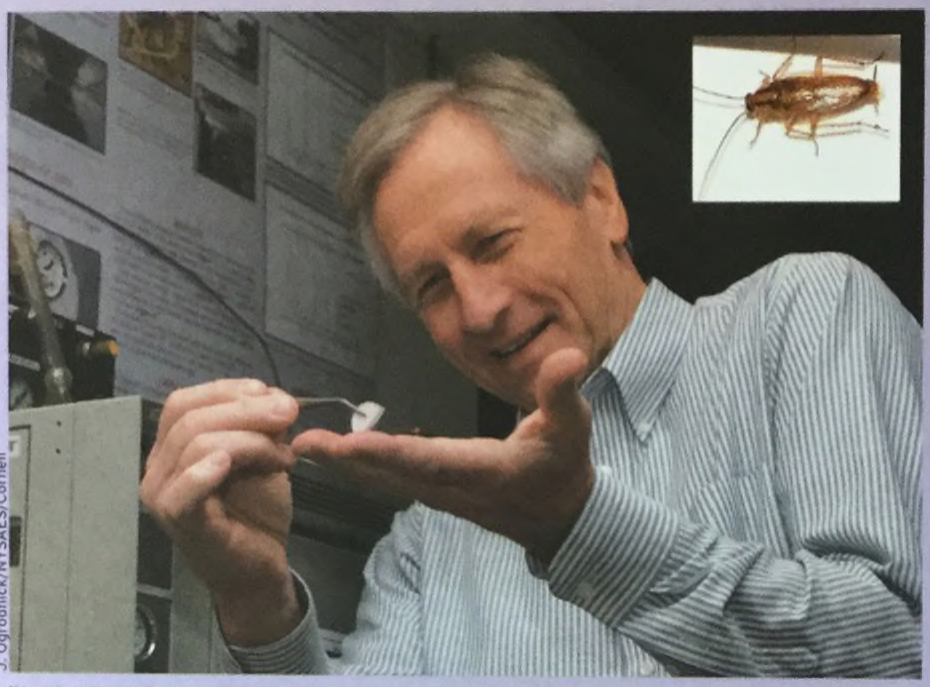
With core faculty from more than 10 departments, the new major has been designed to offer students a greater breadth of relevant courses than they can get in more specialized majors. They will be able to build on that base with a concentration in animal science, applied economics and management, education and communication, or plant sciences/agronomy.

All freshmen entering the program will come together as a group for the same introductory course in crop and soil sciences. They will link up again as seniors for a "capstone" course in which they will collaborate on final projects. In between, they will get together for visits to farms, nurseries, food operations, and other agribusinesses where they can learn in detail about the range of possible careers.

Perhaps best of all, they will be assured that they have a place—together—in the College of Agriculture and Life Sciences.

Jeannie Griffith

German Cockroach Smells Trouble



J. Ogrodnick/NYSAES/Cornell

Wendell Roelofs teases a male cockroach with a synthetic sex pheromone. Inset: A close-up of a male German cockroach.

The days of hosting those loathsome cockroaches as your uninvited pesky house guests may soon be numbered, according to Cornell scientists who have recently made a research breakthrough in sexual chemistry that they hope will aid in extermination. The secret is in the smell.

Researchers have uncovered a new way to control and manage these notoriously resilient pests with a new synthetic sex pheromone that can be used to lure and trap the German cockroach, a pest that is known worldwide for its abilities to wreak havoc in homes and places where food is stored.

Entomologists from Cornell's College of Agriculture and Life Sciences, SUNY College of Environmental Science and Forestry, and North Carolina State University have uncovered a means to isolate, characterize, and synthesize the sex pheromone of the female German cockroach, *Blattella germanica*. The pheromone, called gentisyl quinone isovalerate, or "blattellaquinone," is the chemical used by insects to attract mates. Its odors trigger an attraction to the female who releases the chemical. Pheromone plumes can travel immense distances, but males will gladly follow regardless, as evidenced by the ever-growing cockroach population. Scientists believe the synthetic pheromone will have the same effect.

"We expect this pheromone to provide the basis for powerful new tools to manage populations of this insidious pest," said Wendell L. Roelofs, the Liberty Hyde Bailey Professor of Insect Biochemistry at Cornell, who helped lead the project.

Known as the "father of pheromone chemistry," Roelofs has a great deal of experience in identifying and synthesizing sex pheromones through his past work with the Oriental fruit moth, the codling moth, the tomato pinworm, the peach twig borer, and the European corn borer, among others. His research has led to the novel method of using pheromone mating disruption as an alternative to pesticides. For his work, Roelofs received the Wolf Foundation Prize for Agriculture in 1982 and was elected to the National Academy of Sciences.

Following adequate amounts of testing, the pheromone can be developed into a bio-based product for use in homes, agriculture, turf, and landscapes.

"Several companies are interested in using the blattellaquinone pheromone in monitoring traps, since there is a great need to find some way of luring these cockroaches into traps and insecticide baits," Roelofs said. He expects the technology to be commercialized and agreements to be made with the Cornell Patent Office soon.

Laura Borden '05

College of
Agriculture and Life Sciences
NEWS

College of Agriculture and Life Sciences News is published twice a year by the College of Agriculture and Life Sciences, a unit of the State University of New York, Cornell University, Ithaca, N.Y. Cornell University is an equal opportunity, affirmative action educator and employer.

The Ronald P. Lynch Dean
Susan A. Henry

Senior Associate Dean
William E. Fry PhD '70

Assistant Dean for Alumni Affairs, Development, and Communications
Michael P. Riley Jr. '87

Director of Alumni Affairs
Sharon L. Detzer '88

Director of Communications
Linda L. McCandless '74

Director of Development
Anne D. Benedict '80

Editor
Elizabeth L. Bauman '73

Designer
Dennis F. Kulis

Writers
Laura Borden '05
Aaron Goldweber
Jeannie Griffith
Linda McCandless
Roger Segelken
Metta L. Winter

Production Coordinator
Donna Vantine

Photographers
Robert Barker, Chris Hallman, Kevin Stearns of University Photography; J. Ogrodnick/NYSAES/Cornell

Administrative Assistant
Mary K. Alo

Web site
www.cals.cornell.edu

Produced by Office of Publications and Marketing at Cornell University
7/05 ML 50M 050117

New Farmer Development Project

Farmers across the country are facing a dire question: will there be enough new young farmers to take over their businesses in the future?

This critical question leaves many agriculturists questioning the overall sustainability of farming. Issues like farmland preservation and the plausibility of continuing to produce locally grown food are common topics of discussion, ones that the New York City–based New Farmer Development Project (NFDP) hopes to address.

Developed in 2000, the NFDP is a joint effort by the Urban Food Systems Program at the New York City Cornell Cooperative Extension and the Council on the Environment of NYC's Greenmarket program to educate and support immigrant farmers in the NYC region in establishing economically sustainable farms, while utilizing the agricultural skills and knowledge found in these immigrant communities.

More than 120 "new farmers" from Mexico, Colombia, Ecuador, the Dominican Republic, and Chile learned valuable skills in production, marketing, financial management, and field training—practicing at various farming sites and markets.

Success stories already are coming out of the program, with the launch of new small-scale start-up farms, cooperative farming and marketing ventures, and continued work experience farms such as the Staten Island Decker Farm demonstration site. After participating in the program, the new farmers continue to develop skills through mentoring programs that pair them with local farmers.

Participants learn to adopt Northeastern techniques and also manage to maintain strong connections to their cultural roots by bringing their "culturally appropriate" produce to 15 local markets and several restaurants, most often located in immigrant neighborhoods. Products range from vegetables and small fruits to traditional ethnic products and poultry.

"Our participants from 2004 did over $150,000 in gross sales," said program partner and Cornell Cooperative Extension educator John Ameroso. "This is all through the sales of fresh vegetables, ethnic vegetables, baked goods, and eggs."

Currently NFDP takes place on farming sites within a 100-mile radius of New York City including sites in New York, New Jersey, Pennsylvania, and Connecticut. Four more new farm sites will be available for this year's program, and Ameroso foresees continued expansion throughout this radius.

Laura Borden '05

Swede Midge Makes Move on New York's Vegetable Crops

As a tiny insect known as the swede midge threatens to damage some of New York's most lucrative vegetable crops, College of Agriculture and Life Sciences researchers and extension associates are working swiftly to bring knowledge and solutions to farmers at risk.

The swede midge is a new pest to North America that has been ravaging Canada's cabbage and broccoli crops in recent years and has now been detected in New York's Niagara County. The pest affects plants of the Cruciferae family, such as cabbages, Brussels sprouts, and cauliflower. Swede midge larvae feed on the tips of young plants, resulting in distorted or scarred tissue, and often completely destroy plants. These insects are difficult to see with the naked eye and once crop damage is observed, it's too late to implement management strategies.

The potential damage to New York farms is cause for concern. New York is second in the country in cabbage production, with more than $40 million worth of the crop harvested annually. New York also sees $6 million in annual production from such crops as broccoli, Brussels sprouts, cauliflower, and Chinese cabbage.

Upon learning of the threat of swede midge, extension vegetable specialists Julie Kikkert and Christy Hoepting with Cornell Cooperative Extension's Vegetable Program, along with Anthony Shelton, professor of entomology at the Geneva experiment station, began a grower education and field-monitoring program aimed at fending off the problem before extensive damage can occur.

The Cornell team produced and distributed 2000 copies of a color fact sheet (www.nysipm.cornell.edu/factsheets/vegetables/cruc/sm.pdf), 500 copies of a laminated, pocket-size field identification guide, and 11 extension newsletter articles.

More than 6,500 acres of cruciferous crops were scouted for swede midge during 2002 and 2003, but swede midge was not found. In 2004 experimental pheromone traps were set in eight New York counties—Erie, Genesee, Monroe, Niagara, Ontario, Orleans, Wayne, and Yates—to capture and monitor the pest population. Swede midge was found at low populations on four farms in Niagara County but not in any of the other counties. "This is the first detection of swede midge in the United States," Kikkert said.

Because swede midge is a pest of quarantine status, the USDA will conduct a survey this year to monitor the spread of the insect in Niagara County, as well as a second survey to monitor the rest of New York State.

The Cornell team plans to conduct laboratory and field research to develop a set of Best Management Practices to minimize the risk of establishment and spread of swede midge in New York. They will also continue to monitor the insect population on farms where swede midge was discovered in 2004 and work with the affected growers.

Efforts in finding insecticidal sprays and seed treatments to help combat the problem are also being explored in Shelton's laboratory, where a colony of swede midge has been kept under quarantine conditions for the past year.

With a multitude of preventive measures being taken, Cornell educators aim to avoid a tragedy that cost Canada as much as 85 percent of its broccoli crop during the mid-1990s. The insect went undetected during that time.

"Our educational efforts and early detection of swede midge in New York have helped to reduce the risk of insect spread and the loss of millions of dollars worth of crops," Kikkert said.

Laura Borden '05

University Photography

Hancock found that people tell lies more often on the phone or in person than they do in e-mails.

The Language of Lying

Professor Jeffrey Hancock Investigates How We Deceive Each Other Online—and Off

BY AARON GOLDWEBER

"All I think about is language, language, language," says Jeffrey Hancock, an assistant professor in the Department of Communication. "I want to find out how we actually communicate with each other, how language accomplishes the things it does in the world. How does language *work?*"

Hancock is not afraid to tackle some of the oldest and most confounding questions asked by people throughout human history.

And he focuses the big questions into tangible, if no less challenging, bites.

He asks, "Why do we use irony? How do we know we're hearing it? How do we lie? When do we lie?"

Diving into these questions, Hancock focuses on the collision of human thought and its primary means of expression: language. Right now, his inquisitive, if not obsessive, mind is faced squarely at verbal irony (his "true love") and deception.

"It's not immediately obvious, but irony and deception are quite similar when it comes to the use of language. In both cases, you're saying things you don't mean; it's just that with irony you want people to know you don't mean it, while with deception you want them to think you do," Hancock explains.

This may be straightforward enough, but the tricky part, according to Hancock, is figuring out how the brain manipulates language to express these related variances of communication. And, perhaps even trickier, is figuring out how listeners do and don't know when a speaker or writer is lying or being ironic.

"I can sit here and say, 'That's a nice shirt.' But that could have one of any number of meanings. I might be honest—I actually like the shirt. I could be lying—I hate it but want you to think I like it. I could be ironic—I want you to know I don't like the shirt even though the collective definition of the words I'm using suggest that I do," Hancock says. "The questions, then, are: if I'm being ironic, how are you supposed to know that? And if I'm lying, how do I prevent you from knowing that?"

The most obvious clues come from nonverbal cues: an avoidance of eye contact, an exaggerated smile. These clues aren't always consistent or available, though; so, once again Hancock focuses his questions: "What happens when the communication isn't face to face? How is digital communication changing the way we lie and use irony?"

Using his training in experimental psychology, Hancock creates research environments to study how people communicate using the latest, greatest, and hottest electronic tools. Thanks to e-mail, Internet chat rooms, and text messaging, forums for language use and the ability to study them have ballooned. For Hancock, these new technologies are fertile ground for studying how we use language to achieve a specific goal—be it deception or irony or something else.

By charting the changes effected by different means of communication, Hancock finds hints about the reasons behind subtle and obvious language shifts that occur and steps toward helping to answer the question: How does technology affect language?

Hancock has found the Department of Communication a welcoming home, his work dovetailing nicely with the department's technology focus. His research is closely aligned with work in human-computer interaction (HCI) and computer-mediated communication (CMC) being done by his colleagues Geri Gay MPS '80, PhD '85 and Joe Walther.

Hancock explains, "HCI and CMC have their roots in psychology. They investigate how an interface affects human behavior. Geri and Joe were among the first to research the effects of technology on communication and vice versa.

"Working on this foundation, I ask the question, 'How does technology affect the way we lie and the way we use irony?'" Such a simple question coming in the most innocuous of packages can send a curious mind on a lifelong trek for answers.

Hancock first asked that kind of question while clad in the uniform of a customs agent. In the mid-1990s, as an undergraduate student at the University of Victoria, Hancock and a friend worked at the border as inspectors for Canada Customs.

"We thought," Hancock says, "'Wouldn't our jobs be easier if we had a manual of some kind that could help us tell when people were lying?'" Yes, one would think a built-in mental "lie detector" could help with the carrying out of their duties.

"But, when we went looking for training, it turned out there wasn't any," he says. So the budding academic and his friend set

Digital Deception Has Mass Media Appeal

Jeffrey Hancock's research on deception and technology has been featured in mainstream publications in print and on the web, television, and radio in more than 20 countries and has resulted in dozens of radio interviews and numerous television appearances. A story on the ABC News web site was one of the top 10 e-mailed stories on the day it was published.

Why all the media attention about the online lying study?

"We asked a really cool question," Hancock surmises. "Deception is a hot topic, considering Clinton's Lewinsky case, the Iraq war, and the like."

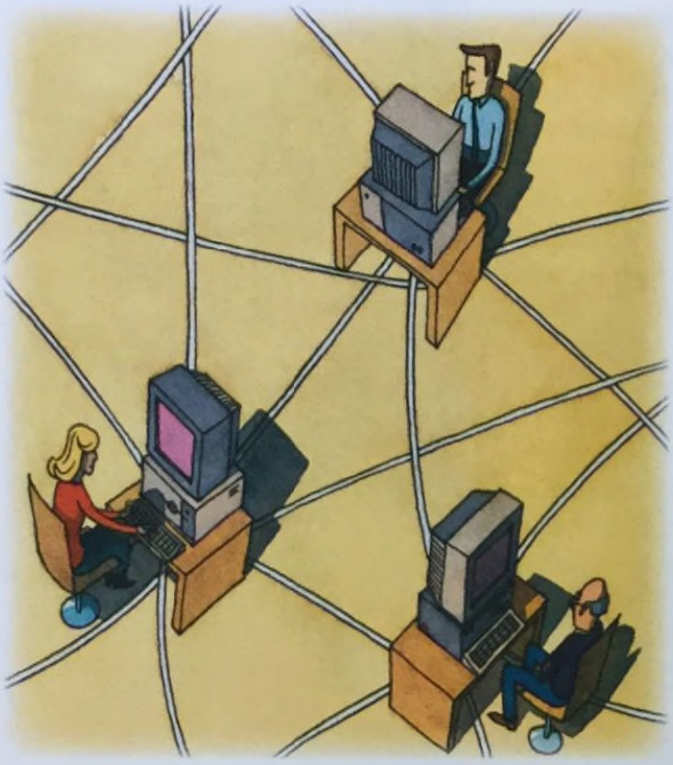
Additionally, he says, the pervasiveness of the Internet "affects everyone at this point," so a story about it naturally attracts people.

The psychologist in him has another theory as well: "The research showed that people lie less online than on the telephone or in person. This was contrary to what most would assume, and people seem to like it when their assumptions are wrong."

The story has also caught on, Hancock thinks, because he presented data in an easily digestible form by using percentages: 26 percent of all social interactions contain a lie; 37 percent of phone calls involve "some deception." Perhaps what caught most people's eye was that the big, bad, unseemly Internet where criminals, scam artists, and identity thieves abound (as common sentiment goes) saw significantly fewer lies: 14 percent of e-mails.

Along with the media attention, Hancock has been contacted by judges, legislators, and business executives. While you would think businesspeople might be looking for help in detecting other people's lies, Hancock says that invariably they ask, "How do I get away with lying?"

His answer? "Do it on the phone."



out to write their own manual on how to detect lies at a border crossing.

"What we came up with was terrible," Hancock admits with a smile. "We found it incredibly difficult to write. We couldn't do it."

After finishing up his bachelor of science degree, he leapt headlong into his studies of experimental psychology at Dalhousie University in Halifax, Nova Scotia, where he completed a master of science and went on to earn his Ph.D. in 2002.

The objective study of language has its inherent challenges. How do you study the very thing you're using to study it?

"There's an old expression, 'The fish in water doesn't know it's in water.' We have the same experience with language; we use it to *think* as well as communicate," Hancock points out.

If a fish can't step out of water and live long enough to study it, how can people step out of language and still think or communicate? They can't. So Hancock has devised different ways of studying social interactions, which, when combined, produce results that give better insights into how often and in what form the brain constructs lies through language.

"One method we use is the 'citizen science' approach—like what the Lab of Ornithology has done with amazing success; they've built up an unparalleled and incredible data set based simply on people seeing a bird and then zipping off an e-mail to report it. We give our participants a personal data assistant (PDA) with a special program that allows them to record information about their social interactions throughout the day," Hancock explains. "They review an interaction and indicate if they lied at all during it."

Unlike observing birds, though, lies come attached with a social stigma. So, participating in the study awakens a certain self-consciousness about lying that may not normally be present. This can have an effect on the data. So Hancock uses lab-based methods for retrospective analysis as well.

"We bring people into the lab and don't tell them what the study is about—nothing about lies, nothing about language. We have them participate in an online chat. Afterward, we ask them to review logs of their conversations and indicate what lies they told."

These methods allow Hancock to discover not only how often people lie, but also what prompts the lies and what the magnitude of the lies is. Another technique gets to the heart of language use: what words are used when one tries to lie.

"We bring two people into the lab. One is told to be completely honest in an online chat, while the other is told to lie up a storm," Hancock says.

The resulting analysis of this data ties into Hancock's other role as a member of Cornell's faculty of Computing and Information Science. Hancock, with help from people in computer science such as Thorsten Joachims, assistant professor of computer science, and Claire Cardie, associate professor of computer science, is working on building an automated lie detector system for online communication. Their work could lead to a utility that analyzes an e-mail you receive and says something like, "There's a good chance you're being lied to at the moment. Take note."

Are we really that predictable with our use of language that when we lie, an off-the-shelf computer program could throw a wrench into our deception? Possibly, Hancock says. In fact, he points out, humans may have their own internal lie detectors, though they often don't know it. In one study, Hancock found that targets of lies tended to ask more questions of the liar—even when they were not consciously suspicious that they were being lied to—as if they were implicitly aware of the deception. Hancock takes this to mean that lies are natural; we've developed the means to tell lies but also the means to detect them.

Hancock notes that although we may get better at telling whether a friend or intimate is lying, they have more practice at lying to us, so it gets harder to detect them. "It's like an arms race of deception," he says.

Hancock most certainly wouldn't say aggressive verbal irony or lying is in need of eradication, though. After all, they are both a part of human nature and, most important for him, fascinating examples of the one thing that's always running through his head: language, language, language.

Maple Syrup

More than Hanging a Bucket on a Tree

by Metta Winter

Brian Chabot

"With maple syrup, the story's the same as potato chips," says Stephen Childs '75, MS '76, referring to what makes the pale color and delicate flavor of light amber grade so highly prized.

What it all boils down to is glucose.

If there's too much glucose in the sap—or the spuds—the product ends up so brown it won't pass a taste test. That's why New York State's 1550 syrup producers keep a sharp eye on the thermometer as spring approaches.

Temperatures alternating above and below freezing throw the "on" switch to start a tree's liquid nutrients "running" up from the ground. And ideal weather—freezing nights followed by sunny days between 38 to 39 degrees F—is needed to keep the sap flowing while safeguarding its naturally occurring sucrose. Sudden temperature spikes can spell disaster. A hot day or two causes yeast and bacteria to multiply, thereby breaking down sucrose into its constituents: glucose and fructose.

"When you boil sucrose, it doesn't darken, but when you boil glucose, it darkens like crazy and can deepen the flavor beyond a point that no one will eat," explains Childs, the New York State extension maple specialist who's been around maple sugaring since childhood, gathering sap with his grandmother.

A quest for technologies to temper the consequences of Mother Nature's vagaries is but one of the reasons the 550-member New York State Maple Producers Association asked the

Chuck Winship MPS '99

From Xerox Executive to Maple Syrup Producer

Chuck Winship recently won the "I Love My NY Farmer Contest" sponsored by NY Farms! in the New York specialties category.

"I can still remember coming down the hill into Ithaca, it was blowing and cold and ugly, and I was doing the monkey mind, talking to myself: 'What am I doing this for? It's stupid! Go to school? I don't have to go to school!'" recalls Chuck Winship of that day in January of 1998 when, recently retired and at the age of 55, he was about to become a student again. "Now when I come down that hill it just feels great. I am coming home!"

Winship had taken a chance on the outcome of his own personal "vision quest." And got a lot more than he had bargained for.

For 33 years, Winship had been part of the management team at Xerox Corporation, overseeing engineers who created products that are benchmarks in the industry today. It was, he says, a great ride, a time when innovation boomed.

When it was time to move to the next phase of his life, Winship turned to the Native American practice for discovering direction in life by spending solitary time in nature with just a jug of water and a journal, listening to himself.

"What came when I was sitting in those woods outside of Syracuse was to go back to Cornell for a degree," Winship says. "After that, everything just fell into place."

As he tells it, living in grad housing and sharing classes with men and women younger than his own children was exhilarating.

Faculty in the Department of Natural Resources helped him put together a program in forestry, ecology, entrepreneurship, and farm product marketing by drawing on courses across the college, as well as those in the Johnson Graduate School of Management.

Now he owns a 220-acre farm—"a prime piece of property, second to none, that I got for next to nothing; that's fate again"—a thriving maple syrup business tapping 2,300 trees this year. He is also a partner in cutting-edge agroforestry research, wrote the grant that funded development of a new maple product (see sidebar on maple cream), and is chairman of the Cornell Maple Advisory Committee.

"What I've done all my life is be ahead of the curve," says Winship of Sugarbush Hollow, the business that now pays the bills, although not quite in the style of his executive days. The Cornell Maple Advisory Committee, which brings Cornell expertise and producers together, harnesses his energy behind a movement to put New York maple products on the map as prominently as are the state's wines.

"We want people to realize there's a great wholesome maple syrup product made in this state and to get more farmers involved," Winship says. "We haven't begun to tap the potential of which we're capable." No pun intended.

Never one to dodge a fight, Winship is right in the middle of the debate over whether to install 1.5 megawatt windmills in his out-of-the-way part of Livingston County. (His own land stands 2,200 feet above sea level.) At town meetings, Winship finds himself an informed participant, thanks to an understanding of this new energy source he had gained in an agricultural and biological engineering courses taught by Lou Albright '62, MS '65, PhD '72.

"Cornell's impact on me wasn't just in maple syrup," Winship says, "but in a whole host of things that are topical issues today. Thank you, Cornell."

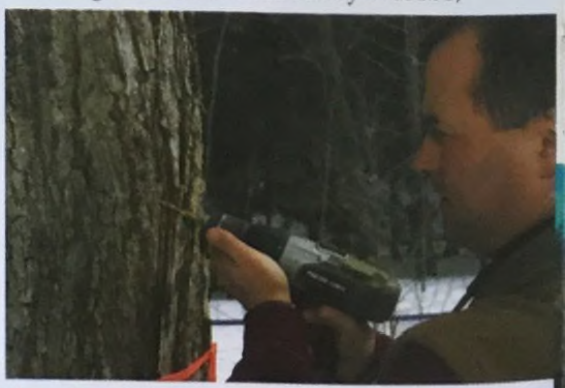
Metta Winter

college to ramp up its 50-year-old Cornell Maple Program. New York State maple syrup is in demand. In 2004, producers boiled 10.7 million gallons of sap into 255,000 gallons of syrup, a 21 percent increase in production over the year before. They sold every last drop. And they want to sell a lot more, with 22 million consumers on their doorstep.

"One of the great frustrations is that we sit next to the largest market in the United States, yet can't seem to get to it while the Canadians can," says Childs, referring to the New York maple industry's leading competitors.

"The producers in Ontario and Quebec are such aggressive marketers that they are filling the growing demand in the United States virtually single handedly," says Brian Chabot, a professor of ecology and evolutionary biology and director of the Cornell Maple Program. New York is neck and neck with Maine in maple sales, but both are behind Vermont, the nation's leader. (How much of the syrup sold in Vermont comes from Vermont's trees is a matter of debate. What is clear is that in the past, Vermont has been a major importer—and then reseller—of New York syrup.)

Effective marketing starts with a consistently high-quality product made from a quick-to-spoil, weather-based raw material that's only available in a critical two-month window—sometime between February and April. Producers asked Cornell's help with one of their biggest problems: controlling the growth of yeast and bacteria in the sap as it flows through miles of 5/16-inch tubing that snakes from tree to tree through the sugarbush to the collecting tank. Chabot and Randy Worobo,



Peter Smallidge, extension forester and director of the Arnot Forest, taps a sugar maple where he will place a spile that connects to the tubing system for sap collection.

a microbiologist at the New York State Agricultural Experiment Station in Geneva, N.Y., designed a project to test the effectiveness of exposing the sap to ultraviolet light as a safe and effective means of microbial control. Worobo, an associate professor in the Department of Food Science and Technology, devised the UV unit to purify apple juice for the cider industry and is figuring out how to adapt the technology for use with maple sap.

Chabot has similarly involved other faculty from across the college to bring their research expertise to bear on a wide variety of maple industry problems. Associate professor of entomology Ann Hajek, a biological control specialist, is one. Hajek has set a group of her students to work on devising methods for controlling forest tent caterpillars—a naturally occurring pest of sugar maples which, during population explosions, defoliates acres of trees, rendering them unproductive for seasons at a time.

Robert Cooke, a professor of biological and environmental engineering, is another. Cooke is converting 15-years-worth of educational videos to electronic form, making them readily available to Cornell Cooperative Extension educators and maple producers over the Internet.

Wen-fei Uva MPS '93, PhD '99, a senior extension associate in the Department of Applied Economics and Management, is looking at how to adapt for the maple industry the marketing strategies she's developed for the state's fruit and vegetable producers.

From the Department of Natural Resources, assistant professor Steven Wolf and senior extension associate Louise Buck PhD '00, both experts in the sociological aspects of natural resource management, are particularly interested in how internal organization encourages the development of the natural resource industries. They've just started a project to compare how New York producers are organized to those in Vermont who have worked together so effectively that maple has become central to the state's image. Remember, the sugar maple is New York's state tree, too.

Brian Chabot

A group of school children get a tour of the Uihlein Sugar Maple Field Station, led by Michael Farrell. The Uihlein is the largest acreage in the world devoted to sugar maple research and extension. One longstanding project there, the Sugar Maple Tree Improvement Program, identifies and produces seed for trees with exceptionally high sugar content.

Childs joined the Maple Program full-time last October. A former owner of a farm-based business, Childs's job is to further the New York State Maple Producers Association's goal of increasing maple production and enhancing sales nationwide.

The New York maple industry is largely retail with producers in direct contact with their customers; so the question is how to take advantage of this unusually personal relationship. As an extension educator in Wyoming County (the number two county in maple production behind Lewis), Childs was influential in developing Maple Weekend, a statewide marketing scheme that both attracts consumers into the sugarhouses and, through the event's web site, links consumers directly to producers' online sales. Last year more than $250,000 worth of maple product was sold on that single March weekend. Hits on the four-year-old web site (www.mapleweekend.com) now exceed 1.2 million.

Childs is also involved in creating and promoting new products. For more than a decade he encouraged the development of shelf-stable maple cream (see sidebar).

"Maple cotton—a spun candy that's 20 percent maple syrup—was a raging success at the New York State Fair last year, grossing $6,000," says Childs, who, knowing it's a hard sell to get consumers to carry little jugs of syrup around all day, is thinking up other tasty treats to eat while strolling through the grounds. A maple wrap may be in the offing for next year.

A vigorous maple industry starts with a vigorous grove of sugar maples, known as a sugarbush. That's where Peter Smallidge, New York's state extension forester and director of the Arnot Teaching and Research Forest at Cornell comes in. Smallidge is responsible for conducting research on forest and sugarbush management and providing landowner education programs through the Cornell Cooperative Extension system to the state's 490,000 forest owners. (More than a dozen county agents—known as the Maple Team—offer maple schools and other landowner programs to producers in their areas.)

"Maple production keeps the forest as a forest and keeps the forest a working forest," Smallidge points out. "We want to make sure maple producers know how to keep their forests healthy."

Kevin Stearns, University Photography

Henry Uihlein

Henry Uihlein saw his first Adirondack sugar shack at the age of seven. "That was at Long Lake back in 1903," he recalled. "I can remember the men explaining to me how they bored holes in trees and then white water ran out. From that they made the maple syrup."

Twenty years later, he was doing the same thing himself on land his father had bought near Lake Placid.

These boyhood experiences, Uihlein said, whetted his appetite to someday become a maple syrup producer himself. That dream came true in 1941 when Uihlein and his wife, Mildred, bought the land near Lake Placid that became known as Heaven Hill Farm. "I wasn't interested in becoming a farmer, but I had made up my mind that I was going to make maple syrup.

"We cut logs from trees on the property to build a modern sugarhouse, tapping 500 maple trees the first year. It was a real family affair. I did all the boiling and preliminary filtering and Mrs. Uihlein did the final filtering and the bottling and canning. Of course, I had help from Cornell in building the sugarhouse and getting the project underway; it was Cornell people who really taught me how to make maple syrup." He turned over the business and 200 acres of prime sugarbush to the college in 1965.

Uihlein's first brush with the college wasn't because of maple syrup, however. He was bound for Cornell to study medicine when, in 1915, he contracted tuberculosis and moved to Lake Placid. Cured four years later, he stayed on in the Adirondacks becoming an avid promoter of amateur speed skating and other winter sports. Uihlein was influential in bringing the Winter Olympic Games to Lake Placid in 1932. He served on the Olympic committee in 1980.

During the 1920s and 1930s, Uihlein had returned to New York City, where he grew up, and become a director in the family-owned business, the Joseph Schlitz Brewing Co. of Milwaukee. He served as a director for 32 years and was named the only Honorary Life director of the company. Uihlein became a farmer, too, in the end, raising premier Jersey breeding stock. He spent his winters in Indian Wells, California, and the rest of the year at Heaven Hill Farm. Uihlein died in 1997 at the age of 101.

Metta Winter

Brian Chabot

Michael Farrell, northern New York maple specialist, processes sap in the sugarhouse at the Uihlein Sugar Maple Field Station in Lake Placid, N.Y.

The 4,000-acre Arnot is one of the few facilities in the United States where research is conducted on sugarbush management. High on Smallidge's research agenda is evaluating different intensities of thinning to optimize overall productivity.

"We know small, healthy trees respond well to release, it's like giving vitamins to a kid," says Smallidge of cutting surrounding trees to maximize available sunlight to the biggest and best-quality trees. The judgment calls get more complex as a forest grows. It's known that some trees have to be cut down or they'll all suffer, yet there's no research data on how many trees to cut and when to cut trees as they reach certain diameters.

"Every time you cut down a sugar maple tree, you are taking away a tap hole that represents $10 worth of product every year," Smallidge explains. "If you cut a 15-inch tree, you are losing a major producer, so when will you recover the cost of that tree through the increased productivity of the remaining trees? We just don't know."

Smallidge involves producers—whose sugarbushes range from the commercial minimum of 100 taps to as many as 30,000—in his research, testing different protocols on small parcels of their land. It gives him a chance to replicate research in different soils and growing conditions and to build strong landowner relationships.

He also has to field year-by-year questions, such as consulting with individual owners on which trees to tap after an explosion of forest tent caterpillars.

Smallidge also supervises producer and public demonstrations of production technology at the recently renovated facility located in the Arnot's 40-acre sugarbush. The sugarhouse processes sap drawn from 2,700 taps through a state-of-the-art high-vacuum, pump-fed collection system, which even draws sap uphill from trees on hillsides down below.

One promising technology is reverse osmosis—similar to what's used to extract salt from sea water—which increases the sucrose concentration in the sap from roughly 2 percent when it comes out of the tree to 6 to 12 percent. New York State Department of Agriculture and Markets requires that syrup for retail sale must be 66 percent sugar, so much more water must still be boiled off on an evaporator.

"If you can go from 2 percent to 10 percent before the sap enters the evaporator you are starting five times ahead," Smallidge says.

Smallidge also teaches Cornell undergraduates who use the Arnot when they take his course Forest Management and Maple Syrup

Production and supervises summer interns conducting maple-related research.

To allow for comparisons between very different climates and soils, the college opened a second maple teaching and research facility in the Uihlein Forest outside of Lake Placid in 1965. With 3,800 taps on 240 acres, the Uihlein Sugar Maple Field Station is the largest acreage in the world devoted to sugar maple research and extension. During the past 40 years, research at Uihlein has addressed a wide range of issues. One is maximizing the efficiency of collection methods to reduce the size of the tap hole—hence minimize damage to the trees. A tiny metal micro-spout just 3 mm in diameter is the latest under evaluation. (We certainly have come a long way since the times when Native Americans gashed the bark with a broad ax to allow the sap to flow freely.)

Another longstanding project at the Uihlein is the Sugar Maple Tree Improvement Program. Begun in 1983 in cooperation with the U.S. Forest Service, it is now the lead test site for identifying and producing seed for trees with exceptionally high sugar content, in some cases as high as 12 percent. Propagation techniques perfected at Uihlein produce cuttings that flower and seed in the year they are rooted. In the wild it would take 20 years.

Research at the Uihlein has also evaluated tree shelters, one of the latest devices to enhance the survival rate of newly planted seedlings. These shelters protect the seedlings from browsing by deer and other herbivores while also providing a favorable micro-climate for superior growth.

Five years ago, six test plots of wild ginseng—the state's foremost agroforestry product with high income potential to maple syrup producers—were added to evaluate the plant's survival under four different hardwood species. Other research projects relating to agroforestry and specialty forest products are planned for the future.

From the beginning, the Uihlein has been the site of producer education programs from advances in sugarbush management to the latest collection and production technology. With a $200,000 facility renovation planned and the arrival, in January, of Michael Farrell as the new, full-time, northern New York maple specialist, increased educational activities will soon attract more of the public as well. For not only is the Uihlein located in proximity to the state's 10 northern counties (where over half of the syrup is made), it's also just outside Lake Placid, a prime Adirondack tourist destination.

"We want to use people's love of maple as leverage to teach them broader environmental education concepts," says Barbara Knuth, chair of the Department of Natural Resources in which the Maple Program resides. "The program offers a way to show how a healthy stand of maple trees contributes to a healthy forest landscape and the importance of that landscape as a natural resource for the state."

Farrell, an experienced environmental educator, plans to develop a nature trail that teaches about the sugarbush as well as other aspects of forest and wildlife management. He also expects to draw in more young people by involving 4-H and FFA groups in propagating sweet trees—genetically superior sugar maple seedlings that contain 4 to 6 percent sugar content in their sap.

"Many of these groups have their own greenhouses, and we can provide them with seed or cuttings so they could grow them up into two-year-old seedlings," Farrell says. "Historically, the demand has far outpaced our production capacity, so involving youth in this process will help bridge the supply gap while simultaneously establishing relationships between the current and future maple producers."

Even so, Farrell is quick to add that you don't have to be a commercial producer to buy a few Uihlein-bred seedlings. Not only are maples beautiful landscape trees, but these sweet trees can also lead to a satisfying hobby, 40 years down the line.

"If you're just graduating and want to do sugaring in your retirement," Farrell says. "Now's the time to plant those trees."

CU Research Makes Maple Syrup the Cream of the Crop

Cornell microbiologist Randy Worobo and food scientist Olga Padilla-Zakour MS '88, PhD '91 of Cornell's New York State Agricultural Experiment Station in Geneva, N.Y., have increased the shelf life and quality of maple cream, the smooth-textured spread made by heating syrup to high temperatures, then rapidly cooling the cooked syrup followed by stirring. Maple cream offers the rich flavor of maple syrup in a form that can be drizzled over ice cream, licked off the spoon, or spread on toast, bagels, muffins, or pancakes.

Padilla-Zakour and Worobo, both associate professors in the Department of Food Science and Technology, devised ways to produce maple cream that has a creamier texture and lasts up to six months. To prevent the formation of surface mold, the researchers added a food preservative, potassium sorbate, at a low concentration of 500 parts per million. To address the issue of separation, 10 percent of the maple syrup undergoes the process of inverting the sugar from sucrose to glucose and fructose by the addition of the natural enzyme invertase.

The result is a maple cream or maple spread that lasts longer, retains the same flavor, and possesses a creamier texture.

Good manufacturing practices for shelf-stable maple cream could increase production and marketing by 10 percent, resulting in an additional $1.6 million per year in revenue for maple producers. For consumers, it adds value to what is already a naturally sweet product.

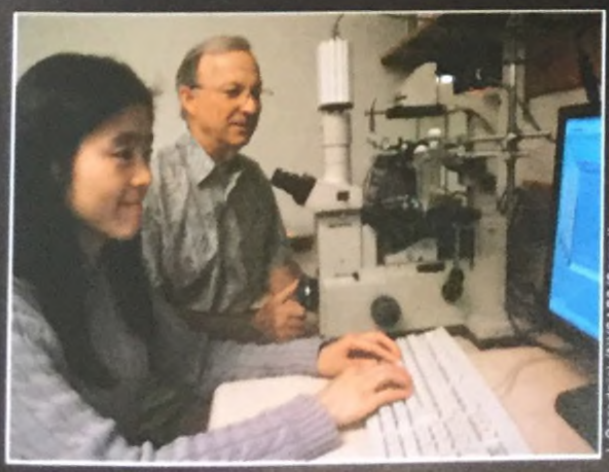
Nate Abbott

The Cornell University Agricultural Experiment Station (CUAES) has been a strong supporter of the Maple Program's research efforts, especially since 1994, providing the program with federal Hatch and McIntire-Stennis Act grants on several projects.

To learn more about maple sugaring and the Cornell Maple Program, go to www.maple.dnr.cornell.edu and www.mapleweekend.com.

Nanotechnology Offers New Insights into Plant Pathology

Cell biologists are using complex imaging and fabrication technologies to explore how bacteria and fungi feel their way around the plant world.



J. Ogrodnick/NYSAES/Cornell

Harvey Hoch and Yizhi Meng at work in their lab at the Geneva experiment station.

BY LINDA MCCANDLESS

Cell biologists at Cornell are obtaining images by scanning electron microscopy and time-lapse light microscopy that make rust fungi on nanofabricated bean leaves look like a team of aliens crawling across the hash marks on a football field. In reality, the surface features are one ten-millionth to one-millionth of a meter high, and the fungal structures are absolutely invisible to the naked eye.

Photo left: Spiny spores of the rust fungus germinate and grow, feeling its way along the leaf surface for topographical cues that trigger it to stop over a stomata through which it enters the host leaf.

"My colleagues and I use electron beam and photolithography techniques to fabricate topographies that mimic leaf surface features as well as the internal plumbing of plants, and then we use imaging technologies to study how bacteria and fungi invade and colonize the leaf," explains Harvey Hoch, a plant pathologist at Cornell's New York State Agricultural Experiment Station in Geneva, N.Y., since 1974, who has been working with submicron surfaces since the mid-1980s.

Testing various infection hypotheses has involved collaborators and researchers in facilities as diverse as the Nanobiotechnology Center, the Cornell NanoScale Science and Technology Facility in Duffield Hall in Ithaca, the Boyce Thompson Institute for Plant Research in Ithaca, the plant pathology department in Geneva, as well as colleagues at other institutions.

For Hoch and his colleagues, the day begins and ends in the lab where all the "splitting hairs" is done at a cellular level with structures smaller than one-hundredth the diameter of the average human hair.

Being able to investigate life from the point of view of a fungus, a bacterium, or a plant gives researchers the opportunity to learn the detailed mechanisms of the microbe-plant relationship.

Like many advances in science, progress at the basic level in the lab precedes the applied work in the field. One of the first steps is to understand how pathogens attack plant cells. Three projects, shown here, illustrate how the micro- and nanoworlds are providing answers to how bacteria and fungi sense their surrounding plant hosts.

Rust in Beans

Hoch's first indications that fungal organisms navigate by a sophisticated sense of touch came as a result of his team's earlier work with the rust fungus *Uromyces appendiculatus*. Plant pathologists and submicron engineers determined that the fungus distinguishes minute differences in leaf surface topography in order to decide where and when to infect its host—bean plants.

The team simulated leaf topography by microfabricating ridges on silicon wafers using electron-beam lithography. They then used scanning electron microscopy and light microscopy to follow the growing rust fungus as it explored the artificial surfaces to demonstrate that the fungus orients itself to ridges similar to those on a real leaf surface. The fungus "crawls" across the ridges until it senses a correct topographical feature mimicking "stomatal lips" associated with leaf stomata, or tiny holes, on the surface of the bean leaf. This event signals the fungus to develop the primary infection structure, called an apressorium, precisely over the stomatal opening to invade the leaf tissue.

Hoch and his team determined that ridges 0.5 µm high were the optimum cue that signaled for appressorium development, and that this size parameter matched almost exactly the size of the stomatal lips of the bean leaf.

"The use of precision-made, highly reproducible surfaces allowed us to elucidate the mechanisms involved in the fungus's perception of signaling cues normally located on the plant's surface," Hoch says. The information has provided greater insight into the inner workings of the bean rust fungus and someday may be used by bean breeders to develop bean plants with a smaller stomatal lip structure that helps make the plant more rust resistant.

Harvey Hoch

Harvey Hoch

Top: "Rust" on bean leaves is the fruiting bodies called "pustules" containing thousands of spores of the bean rust fungus, *Uromyces appendiculatus*. The rust disease can completely wipe out a crop.

Bottom: Using microfabricated surfaces, it was found that the topographical cues are ridges 0.5 micrometers high that mimic bona fide leaf stomata architecture.

Anthracnose in Corn

In a related project, Hoch and his associates investigated destructive events of fungi that cause anthracnose disease on grasses.

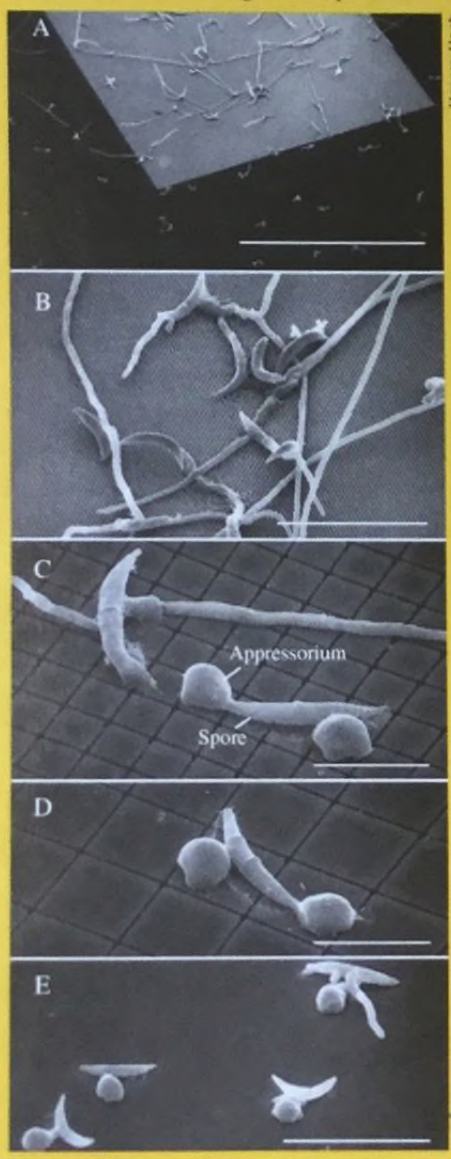
The goal was to simulate the movement of *Colletotrichum graminicola*, the fungus that causes anthracnose on corn and determine what features trigger the fungus to develop an appressorium. In this case rather than being formed over a stomata, the appressoria develop anywhere on the leaf surface where they exert great internal pressure needed to facilitate penetration of the leaf cuticle.

Again, they used nano techniques: lithography to nanofabricate a pillared surface on silicon wafers. This lawn of miniature pillars 1.4 20 µm wide and spaced various distances apart was used to examine movement of the fungus across the surface that mimicked some of the characteristics of the host plant.

Images of the fungus crawling across the nanofabricated surface have helped the researchers determine that the fungus needs to make minimum contact of at least 4.5 µm before it starts to develop appressoria. Knowing this, it is hoped that plants can be bred to possess surfaces that are less inductive to the fungus's sensing mechanisms.

Pierce's Disease in Grapes

In his current work, Hoch and his colleagues in Geneva and at the Wadsworth Center in Albany have moved from studying pathogenic fungi to studying pathogenic bacteria. Their goal is to examine how *Xyllela fastidiosa* moves "upstream" against the flow of sap in the plant's vascular plumbing system, the xylem vessels. Their upstream movement has been particularly puzzling to plant pathologists because the bacteria do not have flagella, whiplash-like propelling hairs, common to many other bacterial species. The bacteria colonize the plant's plumbing system to the point that they block the flow of water and cause the plant to wither and die—developing what is known as Pierce's disease. The bacteria cause millions of dollars worth of damage to grape and citrus worldwide. It is of great concern to growers in the warmer states like California, Texas, and Florida, and is of concern to grape growers in the Eastern United States.



Harvey Hoch

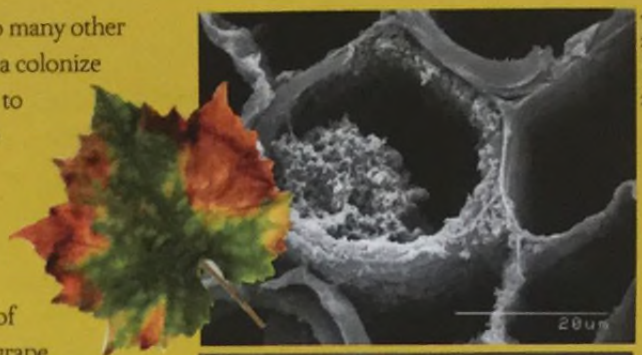
Scanning electron micrographs show the fungus *Colletotrichum graminicola* growing on nanofabricated pillared arrays. Where the individual pillars are very small (0.5 μm wide) and don't provide much surface contact (A, B) the spores of the fungus grow without forming "appressoria." Where the pillars are wider (C, D) or where the surface is completely smooth (E), appressoria are formed quickly. Scale bars, 500, 50, 20, 20, and 50 μm, respectively.

Because the bacteria cannot be readily viewed and studied by microscopy in living plants, Hoch and his post-doctoral associate, Yizhi Meng '98, MS '01, PhD '03, fabricated microfluidic chambers to mimic plant xylem vessels and "infected" them with both wild-type and mutant *Xylella* strains created in the lab of fellow plant pathologists Thomas Burr and Yaxin Li. They created these artificial xylem vessels using a silicone elastomer that was replicated from silicon wafers onto which "master" patterns were constructed with photo-lithography.

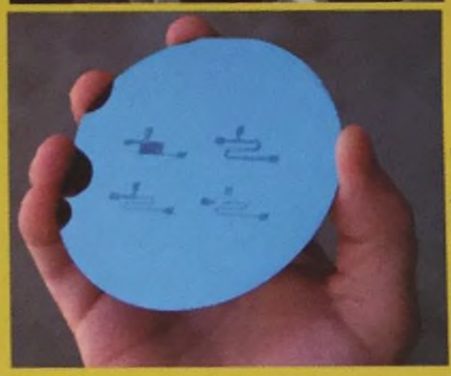
Scanning electron microscopy was used to examine the bacteria in both artificial and bona fide grape xylem. Using time-lapse light microscopy, they created "movies" of the bacteria as they colonized and "clogged" the artificial xylem. With this technology, they discovered that individual bacteria "twitched" their way upstream, against the flow, using pili, or tiny hair-like filaments, to attach the cells to the surface of the xylem wall. As the pili are repeatedly retracted and extended, the cells twitch forward—a nanometer at a time.

Using these movies, they clocked bacteria moving at the microworld fast rate of 12 μm per minute *against* a flow velocity of about 20,000 μm per minute. On a human scale, this feat is comparable to a person swimming against the current of the Niagara River, a remarkable finding.

Burr and Li, and Cheryl Galvani who also works at the Geneva experiment station, are working on transforming *Xyllela* so that the bacteria can no longer "twitch." They are doing this by interrupting the genes responsible for producing the protein that creates the pili. The collaborative team of researchers put the *Xyllela* mutants through a series of nano "swim" tests and discovered that they could prevent them from migrating in the artificial xylem vessels, and also that they did not move in infected plants nearly as well as the wild type bacteria.



Harvey Hoch



J. Ogrodnick/NYSAES/Cornell

Top: This scanning electron micrograph depicts bacteria plugging a xylem water-conducting vessel, similar to that which occurs in Pierce's diseased grape leaves.

Bottom: Four "master" patterns of microfluidic chambers were created using photolithography on a 4-inch silicon wafer. From these patterns, silicone elastomer is replicated and made into artificial xylem vessels.

"Understanding how bacterial pathogens migrate in plant vascular systems may allow us to better manage Pierce's and other xylem-limited diseases," says Meng.

Plant pathologists who better understand the topological and chemical relationship between plants and pathogens can provide horticultural scientists with the information they need to breed plants that are better able to resist infection. The ultimate goal is to manage the pathogen-plant relationship so that crop damage and the use of chemicals can be minimized.

If you would like to see more visuals and movies of the infection process, go to www.nysaes.cornell.edu/pp/faculty/hoch/movies

USDA

Nitrogen Pollution Turns Bays and Rivers into Dead Zones

BY JEANNIE GRIFFITH

University Photography

Robert Howarth can tick off the litany of serious environmental effects of nitrogen pollution, including acid rain, the leaching of calcium from forest soils, ground-level ozone and airborne particle pollution, increased pollen counts, destruction of atmospheric ozone, and global climate change. But the issue that remains his primary focus as a scientist is the causes and effects of excess algal growth—called eutrophication—in the coastal waterways of the United States.

"The best estimates are that two-thirds of the coastal rivers and bays in the United States are degraded from nitrogen pollution," says Howarth, the David R. Atkinson Professor in Ecology and Environmental Biology. "One third of those are really getting hammered. And that's a relatively recent phenomenon; most of these systems were relatively healthy 30 or 40 years ago, so it's within our lifetimes that this has happened."

Too Much of a Good Thing

Those who know their Greek prefixes may not think eutrophication sounds like such a bad thing; "eu" means "good," after all. But what's good for the growth of certain algae, Howarth explains, is not at all good for the coral reefs and seagrasses lower

Human Activity Creates Reactive Nitrogen

First, the good news: 99.99 percent of the earth's nitrogen is nonreactive and biologically unavailable to nearly every kind of living organism. It mostly just takes up space—literally, since it constitutes the bulk of the earth's atmosphere. The bad news is that the burning of fossil fuels and the production and use of synthetic fertilizers, have greatly accelerated the conversion of nonreactive nitrogen to reactive forms. That one-hundredth of one percent of the earth's nitrogen that is reactive—including ammonia, nitric acid, nitrogen oxide, nitrous oxide, and nitrate—is enough to cause a world of trouble.

Human activity accounts for most of the reactive nitrogen present in the environment. There are specialized bacteria that convert nitrogen into organic compounds such as proteins and nucleic acids in a process called biological nitrogen fixation. The extreme heat from lightning also creates reactive nitrogen.

Nature also has a way, known as denitrification, of converting nitrogen back to its nonreactive state. Anaerobic bacteria use nitrate, the most common form of reactive nitrogen, instead of oxygen for respiration and reduce most of it to harmless N_2 in the process. These bacteria could clean up our coastal waterways in relatively short order if we stopped adding to the problem.

There is one complication, however, Robert Howarth cautions. An estimated 30 percent of the nitrous oxide generated as a consequence of human activity is released from rivers, estuaries, and continental shelves as a byproduct of denitrification.

"Nitrous oxide is the longest-lived greenhouse gas in the atmosphere; it has a half-life of 120 years. This gas is responsible for catalyzing the destruction of the ozone in the stratosphere. It's right up there with chlorofluorocarbons in terms of creating holes in the ozone layer," he says.

The imbalance between the rates of nitrogen fixation and denitrification is a recent problem of our own making, and Howarth is convinced that we can largely correct the problem if we commit to changes like closing the loopholes in emissions standards, adopting hybrid and fuel-cell technology, not overfertilizing, and planting winter cover crops to help prevent nitrogen runoff in the spring.

"I do think we have the technology to solve this problem. All we lack is an informed population and the political will," he asserts. "I'm actually a lot more optimistic about this than I am about a lot of other issues."

down, which no longer get enough sunlight, or for the fish and other marine creatures that depend on the grasses for spawning.

"Seagrass beds are really important nursery grounds for all sorts of fish, shellfish, scallops, and things like that," he says. "We know that places that have seagrass have a tremendously higher biodiversity and a lot higher habitat quality, particularly for juveniles of these species, than places that do not." And although algal growth oxygenates surface water, that oxygen doesn't necessarily reach the heavier layers of seawater underneath. The dead algae do, however, and their decomposition can use up all the oxygen in those trapped lower layers of water.

The scientific designation for waters that lack oxygen is either "hypoxic" or "anoxic," but the term that says it all is "dead zone." The most dramatic U.S. example of this phenomenon lies off the coast of Louisiana in the Gulf of Mexico. There, a plume of nutrient-enriched runoff extends westward from the mouth of the Mississippi River for as much as 7,000 square miles. The resulting dead zone, which doubled in size between the early and late 1990s, now occupies an area the size of New Jersey where the only sea animals to be found are the bodies of the crabs and worms that could not swim to safer waters.

The Gulf dead zone may be the largest, but the consequences of eutrophication may be more serious for the Chesapeake Bay ecosystem, crucial nursery grounds for crabs, oysters, and a significant portion of the mid-Atlantic fisheries catch. "Chesapeake Bay is one of the worst places, partly because it's highly sensitive to nitrogen pollution," Howarth explains. "It doesn't really get any more nitrogen pollution than Delaware Bay or San Francisco Bay, but it has a reasonably long water residence time. Contrast that with New York Harbor estuary, which gets five times the nitrogen, but the water flushes through there so quickly that the algae can't really use it effectively."

The problems in the Chesapeake have been well known for decades. Howarth points out that the Chesapeake Bay Agreement, a multistate federal agreement to reduce nitrogen loading to the bay by 40 percent by the year 2000, dates back 20 years. "They spent billions of dollars on that, and we have not reduced nitrogen loading to Chesapeake Bay from nonpoint sources such as agriculture and atmospheric deposition one bit by 2005, so it's sort of a glaring failure, if you will, of the science-policy interface," he says with a bemused smile.

Howarth cites several reasons for this failure, beginning with the widespread assumption that agricultural practices deserve most of the blame for the bay's problems. Whereas agricultural runoff is an important problem, it may not be the biggest factor, as he has recently shown. In research findings he presented in February to a meeting of the American Association for the Advancement of Science, the biogeochemist and his colleagues have demonstrated that the impact of atmospheric nitrogen deposition—primarily the fallout from auto exhaust and coal-burning power plants—is much more significant than previously believed in the Chesapeake and other watershed areas in the heavily populated coastal areas of the northeastern United States.

Fuel for the Debate

Previous models of the effect of acid rain on eastern watersheds have been based on

Nitrogen effects in coastal waters include "dead zones," increased frequency and duration of harmful algal blooms, habitat degradation and alteration of ecological structure, and loss of biodiversity.

Robert Howarth

studies that measured nitrogen deposition in regions of low population and at a remove from pollution sources. Howarth and his colleagues found three times that much atmospheric nitrogen pollution washing into the Chesapeake. Based on their analysis there and in 15 other major Northeast watersheds, he has concluded that the total volume of oxidative nitrogen being produced from fossil-fuel emissions has been underestimated, perhaps by half.

Howarth has found one important reason for that miscalculation on the ground along the road. "The assumption has been that all these sources mix up in the troposphere and tend to be transported quite some distance before being rained out," he explains. "It became clear to me that things weren't adding up, and the one possibility was that some of the stuff coming out of cars is being deposited on the ground, very near the vehicle sources, and going into the streams as opposed to going up into the atmosphere."

So he, his wife and senior research associate Roxanne Marino PhD '01, and graduate student Neil Bettez decided to test the soil near busy roadways. They were soon perplexed, however, to find very high levels of ammonia. It so happens, they then learned, that a change in catalytic converter technology about 10 years ago delivered a new setback to the environment. These devices were originally designed to take the oxidized nitrogen produced by internal combustion and return it to the atmosphere as harmless N_2, its nonreactive form. "Then some of the manufacturers came up with a new catalytic converter that's much more likely to reduce it to ammonia. It's still reactive nitrogen, but it's not regulated."

Corbis

The other variable that Howarth says has not been considered is climate change. "It's sort of a static, mid-1980s view of the world to think that you can solve this problem by reducing the nitrogen load to 40 percent of what it was then and hold everything else constant," he notes. "The climate has gotten noticeably warmer over the past 20 years; it's getting wetter in the northeastern United States; and that undercuts some of these efforts. The regulators really need to be more ambitious in what they're going after. That's not a pleasant message, because it makes the job harder, but we need to recognize that that's reality."

Focusing Public Policy

Howarth was one of the first scientists to start working to counter the nitrogen threat. Trained in oceanography and working as a salt marsh wetland ecologist for the Marine Biological Laboratory in Woods Hole, Massachusetts (where he still maintains a joint appointment), he found himself increasingly drawn to questions that would be difficult to reconcile with his funding there. He and Marino moved to Cornell in 1985 so that they could pursue those questions in earnest.

By 1988, when he was serving on a National Academy of Sciences committee charged with big-picture thinking about the environment, Howarth was ready to push the nitrogen issue. "It took a couple of years for it to catch on, but an international project started in 1992 to focus science's attention on nitrogen," he relates. Howarth co-chaired that effort with Australian soil scientist John Freney; the committee soon set its sights on policy reform.

In response to the urgent need for a comprehensive understanding of the nitrogen problem and public adoption of effective countermeasures, Howarth and a core group of high-visibility experts recently formed the North American Nitrogen Center. The Center, of which Howarth is director, will bring together scientific teams to perform a quantitative assessment of the global consequences of nitrogen pollution to ecosystems and human health. The group also aims to account for all the nitrogen we have released into the environment and all of its sources; focus policy toward preventing pollution; and improve communication with the public about the issues and potential remedies.

"We have a big problem," Howarth acknowledges. "But one of the reasons I'm optimistic is that people are beginning to figure that out, and there are solutions. We can make really rapid progress if there's a little bit of political will. I can't believe that we won't be there in 10 years. People are going to wake up."

Bob Howarth is determined to make sure that we do.

People

Education of a Winemaker

Do-it-yourself degree was start for Marcassin Vineyard's Helen Turley '76

Helen Turley and her husband, John Wetlaufer, at their California vineyard

A phenomenally successful vintner in her own right, Helen M. Turley also is the superstar consultant to aspiring vintners with megamillion chunks of California real estate and dreams of duplicating her success.

Her wines earn high marks: wine critic Robert Parker gives the 1999 Marcassin Chardonnay "Alexander Mountain—Upper Barn" a 96 rating (out of 100), for instance, and a rave "simply amazing" to the 98-rated Sonoma Coast Chardonnay "Marcassin Vineyard" that she bottled in 1998.

When it comes to rating her CALS education, Turley gives it top marks. Her 1976 Finger Lakes bachelor's degree in agriculture was a worthy first effort for a college that now competes with UC Davis in the fields of viticulture (grape growing) and enology (winemaking).

Back in the 1970s, Turley had to design her own degree program. All she could think of in 1972, with a Great Books background from St. John's College and a husband, John Wetlaufer, teaching philosophy on the graduate faculty at The New School, "was that I wanted to be a farmer and we loved wine."

French wines were affordable then for a young couple living in Manhattan on a graduate assistant's salary, and the Cornell campus was a Greyhound bus ride away. With no viticulture or enology curriculum in place in the College of Agriculture and Life Sciences, she says, "I had to think what I was trying to accomplish. I read all the course descriptions, across the various departments, and pretty much made it up."

She began with botany under Harlan Banks PhD '40, whom she remembers with fondness and awe, saying, "He inspired his students and graduate assistants alike to learn, not regurgitate facts." Ag economics was a must, as was plant pathology and entomology to get a jump on diseases and bugs that can spoil a harvest, and she needed chemistry and soil science to get at the root of the matter. She still refers to a well-thumbed chemistry text by Robert Plane, who used proceeds from his bestseller to retire and start a vineyard on the west shore of Cayuga Lake.

The wine tastings in the beverage management class in the hotel school helped train Turley's palate.

What passed for field experience at the time—hardly the range of internships offered now in Cornell's viticulture and enology program—was the opportunity to harvest "free-for-the-picking" grapes one cold, rainy October weekend in 1975 from the Dundee, N.Y., land of Fulkerson Winery. Turley had joined Cornell's crew, the second year the sport was offered to women at Cornell, to build upper-body strength for the rigors of grape farming. Still, the cumbersome wooden crates of waterlogged grapes she shouldered along slippery clay hillsides above Seneca Lake made her question her career choice. As did the first pressing by Turley, Sayre Fulkerson '75, and the other student-winemakers, which she called "a trickle of watery green fluid" into the pasta pot they substituted for a juice pan. The students lined the old basket press with burlap, refolded the press cloth, and were rewarded "with a flow of strange smelling juice," Turley recalls.

Whatever became of the first pressing, it was a long way from the $300 to $400 a bottle that Marcassin Chardonnays command today.

Nearly 30 years later, the enology/viticulture curriculum at Cornell resembles the one Turley wishes had existed when she was a student. Today, there's a solid grounding in chemistry, food chemistry, and microbiology, as well as some botany and plant physiology. Students are encouraged to choose electives in farm business management, food law, or agricultural finance. And there is a required, senior-year class called Understanding Wine.

Turley would like the program to further whet students' appetite for the business she loves—and wet their whistles, too. She'd like students to taste all kinds of wine—lots of them. She believes the viticulture and enology program needs tasting-laboratory courses, supported by a comprehensive wine-tasting "library."

"Developing a sensory vocabulary and memory is something every winemaker has to do," she says. "You need to start in a proper tasting laboratory, and learn to teach yourself to be a winemaker."

Roger Segelken

What's an Inauguration without Flowers?

Every four years, Carmen Cosentino '54 dresses the capital in its floral best

Carmen S. Cosentino didn't travel far for what he still calls "the best floriculture program in the country," just 35 miles down the road from Auburn, N.Y. But then he hadn't moved more than 70 feet from the house where he was born to become the third generation in the family business, Cosentino's Florist.

Yet his CALS degree and the career he built on it—as a retail florist, educator, writer, consultant, and industry leader—have taken him all over, most recently as a florist to the last five Presidential Inaugurations.

"Inaugurations were awfully drab affairs," Cosentino recalls, "until the Society of American Florists asked the question, 'Why so few flowers?' The Presidential Inaugural Committee said, 'We've never thought of it.'"

What the trade group thought of was a little more enterprising—to invite about 100 of its most talented members to come to Washington, D.C., a couple of days before the Inauguration to decorate the parties and gala balls with hundreds of thousands of artfully arranged flowers. Cosentino had been a Society of American Florists director, counselor, and committee member over the years, "and an invitation to the Inauguration (of George H. W. Bush in 1989) seemed like an honor," so he brought along his wife and business partner, Anne Marie.

An honor, maybe, but what awaited also was an onerous task, day and night, sometimes in unheated warehouses, of frantically assembling hundreds of floral arrangements for dinner tables, entryways, and bandstands.

This year, for George W. Bush's second Inauguration, the Cosentinos arranged flowers at nine balls and two dinners, using about 225,000 stems of flowers. One colossal event had 11,000 guests "and Anne Marie just had her knee replaced," reported Cosentino, who took on an even bigger challenge: the cavernous Pension Building. That colonnaded edifice on Judiciary Square, first used for Inauguration festivities in 1885, was embellished this time with 14-foot-long trailing garlands.

But surely, admission to the legendary Inauguration parties makes up for all the labors? Well, not exactly. The volunteer florists, whose only compensation is for lodging, meals, and travel expenses, did attend one party the first year. But the best honors come from one's peers, and Cosentino has earned plenty of that kind. There are the 1991 Good Friend of the Rose Industry award from the Association of Canadian and American rose growers and the 1993 First Among Peers award from the Michigan Floral Association, presented annually to a national figure for work throughout the industry. He's proudest of his 1999 election to the Floriculture Hall of Fame, which called him a recognized authority on marketing and management in the floral industry.

Cosentino readies an arrangement of roses for Inauguration festivities at the Pension Building.

At Cornell in the 1950s, Cosentino managed to find time in the floriculture curriculum for course work in journalism and speech, and that background has paid off in his work in continuing education. His most popular seminar, "All About Roses," has been presented more than 175 times, and he is frequently called on by various state floral organizations to deliver the motivation-packed "39 Business Building Ideas in 59 Minutes" seminar. A contributor and columnist for trade publications, such as *Horticulture*, *Floral and Nursery Times*, *SAF: Floral Management*, and *Professional Floral Designer*, Cosentino has his first book, *The Flowers We Sell*, set for publication this fall.

Cosentino maintains his connections to the college. For years Cosentino was a trustee of the Kenneth Post Foundation for Floriculture, and more recently, he has served as a director of the Seeley Conferences, the annual think-tank explorations of topics important to the floral industry.

Carmen Cosentino thinks about retiring now and then, but he knows his three children aren't interested in the business. "So I have to keep the doors open," he says. "Where else would my (92-year-old) mother work? Besides, there are still challenges."

Roger Segelken

People

A Love for Exotic Animals Carries Latoya Schultz '05 from Guyana to Cornell

Lots of kids grow up with pets, and for the ones with aspirations of veterinary careers, those beloved creatures become their inspiration. But not too many can boast a pet toucan as a muse. Then again, most students do not have Latoya Schultz's unique history.

Schultz grew up in Guyana, South America, on the Atlantic coast just north of Brazil. While helping the vet at the nearby kennel in her small town, she had ample opportunity to explore and interact with the wildlife she was surrounded by. Her experiences made her realize at a young age what she wished to do with her life and that her country needed veterinarians.

Wanting her daughter to receive the best education and skills possible to pursue a veterinary career, Schultz's mother packed up the family members and moved them worlds away to Brooklyn, N.Y. The setting was vastly different from their hometown, and Schultz recalls the initial shock of being surrounded by significantly less flora and fauna. However, she soon began volunteering at the New York Aquarium as well as her high school's vivarium, a housing and rehab facility for reptiles such as iguanas, snakes, and turtles. This work sparked her interest in exotics; at the aquarium Schultz connected with a CALS alumnus who suggested she look into the Cornell veterinary program.

Schultz was immediately impressed with Cornell, but her worries about getting into such an outstanding animal science program almost kept her from applying. At the encouragement of her family and the mentors at her school, she submitted her application the night before the deadline. Much to her satisfaction, she was accepted as an early decision applicant.

Schultz is a novelty of sorts in the Department of Animal Science. Most students are interested in large animals such as cattle or horses, and many others are there to study dogs and cats, but Schultz stands by her decision to study exotics and wildlife.

She has gained research and work experience. Two years before coming to Cornell, she worked on a project at Columbia University sponsored by the National Institutes of Health, working on developing a site-specific form of chemotherapy. She also has worked at the Florida Keys Wild Bird Rehabilitation Center (where she was able to take part in a whale rescue that occurred near the facility during her stay) as well as the Clinic for the Rehabilitation of Wildlife on Sanibel Island off the coast of Florida. She has conducted research in subject areas as varied as cardiac arrhythmias in German shepherds and pre-parturient nutrition in dairy cows. Her current projects include studying the effects of heavy metal contamination in the environment on river otter health and the epidemic-like spread of mycoplasma gallisepticum in house finches.

"These projects combine my love for wildlife with my concern for the environment," Schultz says.

A driven student with a contagious enthusiasm for what she believes in, it is no surprise that Schultz has big plans for the future. She has recently achieved one of her life's major goals: acceptance to Cornell's College of Veterinary Medicine. Now she looks forward to reaching new goals.

Schultz intends to complete her otter research and publish her results with her mentor. She plans to continue her work with exotics and wildlife, perhaps taking a residency at a prestigious location like the San Diego Zoo, and to never stop learning through research. Her ultimate goal is to take her expertise back to her home country, to do charitable work wherever it is needed, and to mentor other students who face similar challenges as she did growing up.

"I am not doing this for the money," Schultz says. "My purpose is to take care of animals."

Laura Borden '05

Food Science and Culinary Art Make a Delectable Mélange for Christopher R. Loss '96, MS '01, PhD '05

What do you get when you mix artistry and science when studying food? A beautiful soufflé. "There's both science and art in a beautiful soufflé," says Chris Loss, who just finished his Ph.D. in food science this May. In other words, understanding the components and scientific reactions that make a great soufflé is just as important for a culinary chef as for a food technologist. Yet until now, most culinary studies have focused solely on the artistic aspects, while food science remains more or less in the laboratory.

Loss is part of a movement hitting culinary schools and food science departments that promotes the study of both the art and science of food preparation. The hope is to develop practitioners who have a greater understanding of the physical and biochemical principles underlying culinary traditions. In doing this, Loss hopes to inspire chefs and food service professionals to pursue their interests in food and food systems from a scientific perspective. He believes that in taking this approach, culinary practices will be preserved and optimized, and that the product development industry will also benefit.

Loss has an extensive and diverse culinary background, starting well before he came to Cornell. He studied at Tulane University in New Orleans, a gastronomic capital that sparked his interest in the culinary arts. He graduated from the Culinary Institute of America in Hyde Park, N.Y. in 1993, where he gained much of the classical training in food preparation, which he practiced in various restaurants, from small French bistros to larger American cuisine houses. Loss also traveled the world, spending time in Belgium, France, and England, gaining further exposure to various culinary styles.

From this varied background in the art of cooking, his travels enticed him to take a closer look at the scientific side of food. He now has called Ithaca home for 10 years and has become a fixture in the Department of Food Science. He finished his bachelor's degree in 1996, after which he worked for a product development company for three years, designing yogurt and ice cream for a multinational food company. During this time, Loss also taught cooking classes at the Tompkins County BOCES. He returned to Cornell to get a master's degree, which he completed in 2001.

Dairy has been his main focus of study while at Cornell. He has been looking at milk as a model system for understanding the microbial ecology of foods and the effects of stress on bacterial survival in the processing environment. His thesis focuses on modeling bacterial thermal inactivation kinetics, the underlying mechanisms of their survival, and molecular-based methods for determining the microbial diversity in foods. Through the mentorship of encouraging professors, he also began to focus on educating others, which has developed into a desire to work in academia.

In addition to his Ph.D. work, Loss has been developing and teaching an online course for the Culinary Institute called Food Science and Technology: Application to Menu Research and Development. The course incorporates his interests in educating future culinary professionals about the combination of science and art involved in food production. Eventually he hopes

to take the course live to the Culinary Institute as a full-fledged professor.

Ultimately, Loss's goal is to generate a combined understanding of the education, art, science, and social aspects surrounding food and cuisine. The best way to do this, he believes, is to place food science and culinary arts into the same classroom and create a new course of study called "culinary science." No doubt before long, Loss will be leading the first Culinary Science Department and be at the forefront of teaching this new and innovative curriculum.

Laura Borden '05

People

Barbara McClintock: First-Class Scientist

Here's something to write home about. Barbara McClintock, BS AGR '23, AM '25, PhD '27, Nobel Prize '83, has been accorded a new kind of first-class status: her likeness now appears on a stamp issued by the U. S. Postal Service.

McClintock enrolled in CALS in 1919 to pursue studies in plant and animal breeding. After earning a PhD, she stayed on to work with the legendary professor Rollins A. Emerson, who started McClintock studying the genetics of maize.

Within a few years of finishing her PhD, McClintock had made a half dozen significant discoveries relating to the location of genes on chromosomes.

In 1936 she accepted a job as an assistant professor at the University of Missouri. Within five years, she took a post with the Department of Genetics at the Cold Spring Harbor Laboratory and remained there for the duration of her career.

McClintock, who died in 1992, achieved considerable recognition within her lifetime. In 1944, she became the youngest person and only the third woman ever elected to the National Academy of Sciences, and the first woman to be elected president of the Genetics Society of America.

But her greatest work was still ahead of her. She first articulated her theory about genetic transposition, the idea that genes could change their position on a chromosome, in 1948. This concept became known, colorfully if not entirely accurately, as "jumping genes."

McClintock received a series of crowning recognitions following her retirement in 1967, including the Wolf Foundation Prize in medicine, the first MacArthur Foundation fellowship, and a shared Albert Lasker Basic Medical Research Award. At the age of 81, she became the third woman, after Marie Curie and Dorothy Hodgkin, to be given an unshared Nobel Prize in the sciences.

The McClintock stamp shares a sheet with images of three other late greats of American science: Nobel Prize–winning particle physicist Richard Feynman, 19th-century mathematical physicist Josiah Willard Gibbs, and computer scientist John von Neumann.

Jeannie Griffith

Thomas Burr Is New Director of Geneva Experiment Station

Signaling the start of a new era, Thomas J. Burr has been appointed associate dean of the College of Agriculture and Life Sciences and director of the New York State Agricultural Experiment Station (NYSAES) in Geneva.

"Tom's demonstrated accomplishments in leading the plant pathology department at Geneva have provided him the experience and perspective he needs to set a new strategic vision for Geneva in collaboration with faculty, staff, stakeholders, and state and community leaders," said Susan A. Henry, the Ronald P. Lynch Dean of Agriculture and Life Sciences.

The new director greeted the news, saying, "I am extremely honored to have been selected. One of my main goals will be to work with the station faculty, staff, and stakeholders on issues that are of vital importance to the food and agriculture industries of New York.

Burr replaces Robert C. Seem, who has served as interim director of the station since Jan. 1, 2004, and James E. Hunter, who served as director from 1990 to 2003.

Turning to the road ahead, Burr expects landmark developments in molecular biology, genomics, and associated technologies to offer a wealth of opportunities for investigating agricultural issues. He also expects web-based and video-conferencing technologies to be important in how stakeholders, scientists, and students receive and disseminate information.

Other new developments that Burr said will contribute to the future success of the NYSAES include the expansion of the USDA-ARS Plant Genetic Resources Unit (PGRU) at Geneva and the construction of the Cornell Agriculture and Food Technology Park (CAFTP).

A member of the Cornell faculty since 1977, Burr has served as chairman of the Department of Plant Pathology at the NYSAES since 2001. Burr has made substantial contributions in advancing research on plant diseases that are of local and worldwide importance, conducting research and extension on the biology and control of bacterial pathogens that affect fruit crops, particularly grapes.

Burr received a B.S. in agricultural science in 1971 and an M.S. in plant pathology in 1973, both from the University of Arizona. He received his Ph.D. in plant pathology from the University of California at Berkeley in 1977.

Linda McCandless

At 102, Cecil Compton PhD '47 Reaches His Centennial Before the College

Celebrating a centennial is an outstanding feat, but 102-year-old Oliver C. "Cecil" Compton PhD '47 makes it sound easy. "You still have another year to go before you catch me!" writes Compton in a letter congratulating the College of Agriculture and Life Sciences on its centennial.

Compton resides in Corvallis, Oregon, at his home of 51 years where two acres of land support his orchard and vineyard. He boasts 150 varieties of apples, eight varieties of grapes, and some other fruits, all of which he still happily attends to with some help. Fruit has been his life-long hobby and focus for research.

Compton began his career at the University of California at Davis where he received both his bachelor's and master's degrees. With an interest in pomology, Compton was encouraged by Cornellians then studying at UC Davis to give Cornell a serious look for its then-strong pomology program. He took their advice and traveled clear across the country to pursue his PhD, producing a thesis on how oxygen levels affect apples' uptake of various nutrients like nitrogen, magnesium, and phosphorus.

Back when he was a Cornell student and a member of the Alpha Zeta fraternity, he had the opportunity to meet Liberty Hyde Bailey during a dinner at the fraternity house. Compton assures us he was a very likeable and interesting personality.

Another of Compton's fond recollections is meeting his wife, Mary PhD '41 (now deceased), who was pursuing a PhD in plant physiology. They shared lunch on the shores of Beebe Lake and a research lab.

After finishing his degree, Compton took a position with the Horticulture Department at Oregon State University in 1948, where he began studying airborne fluorides and their effects on fruit tree health. Then he became a researcher and educator in tree and soil nutrition. He testified in an Oregon court on the effects of airborne fluorides on fruit trees released from aluminum smelters along the Columbia River, not far from Portland.

Compton retired in 1968, but continues to serve as a professor emeritus, still reaching out to students in his field.

Current Cornell horticulture professor Lailiang Cheng fondly remembers Compton when he was in his late 90s: "He was very kind to graduate students," recalls Cheng. "He invited me and several other graduate students to his house for dinner and showed us his blueberries, blackberries, grapevines, and apple and pear trees."

Compton's good humor and positive outlook toward life show just how fulfilling it can be to follow a life-long passion.

Laura Borden '05

Steven Tanksley Receives Prestigious Kumho Award

Star Cornell plant breeder and world leader in plant genomic research Steven Tanksley, Liberty Hyde Bailey Professor of Plant Breeding and Genetics, recently received the prestigious 2005 Kumho Science International Award in Plant Molecular Biology and Biotechnology for his work in genome mapping, comparative genomics, and marker-assisted breeding of crop plants.

The prize, a $30,000 award given by the Society for Plant Molecular Biology and funded by the Kumho Cultural Foundation of South Korea, is the world's largest award in the field of plant molecular biology given "for meritorious research in plant molecular biology/biotechnology." Tanksley will deliver a lecture this summer at the Kumho Art Gallery in Seoul, South Korea, where he will also accept the award.

University Photography

ALUMNI ASSOCIATION PRESIDENT'S COLUMN

President's Message from Richard D. Jones '71, MS '77, PhD '78

Are you making memories? When alumni return to campus, they recall the many memories from their time at Cornell. We fondly remember friends, professors, new experiences, challenges, and many "firsts" in our lives. Have you ever thought about why college has such a strong legacy of memories? One of the likely reasons is that overcoming new challenges with the support of other people makes lasting memories. We remember the times we work hard to accomplish something, and we remember the people who help us accomplish that. College is full of those new experiences and people we shared them with. That is why college becomes such a strong personal memory.

Is CALS making a legacy of memories for current students, and are you, as an alumnus, helping to make that possible? From the college's perspective, staff and professors need to create academic and personal challenges that engage students, prepare them for the future, and celebrate their success. The programs of a college must constantly be changing to keep that cutting edge of innovation. If a curriculum ever becomes routine, it will fail to create lasting memories. Also, the college must create challenges with a personal touch—ones that encourage professors and students to work "face to face" to engage in the work of learning.

Where do alumni fit into building such a legacy of memories? First, many alumni play an active role in personal interaction. Whether it is recruiting students, speaking on campus, or advising students through Career Link, their personal interactions through many volunteer roles will become student memories. Also, serving on advisory committees, providing feedback to college leaders on programs, and just staying current with the research helps to make sure the curriculum is innovative and challenging. Finally, financial contributions—from a small one, such as a portion of your alumni dues going to scholarships, to a large one, such as endowing a professorial chair—collectively make a significant contribution to enriching the resources available to the college.

Enjoy your college memories, but please remember your role in helping to create a future legacy of memories for the next generation of students.

1940s

Howard A. Schuck '41 of Tucson, Ariz., recently published *A Fish Biologist's Impact on National Security*, a book that catalogs Schuck's career as an analyst for the Department of Defense during the Cold War. An exciting account of how an everyday American used his talents to serve his country, the book is inspiring for historians, defense analysts, or anyone else who loves a great story. Schuck has written 200 scientific and governmental publications.

Helen Ross Russell, PhD '49 of Jersey City, N.J., is writing and conducting workshops across the United States and in England, Canada, and the Caribbean. She spent 17 years as a professor, department chair, and then academic dean at Fitchburg State College in Massachusetts.

E. Travis York, PhD '49 of Orlando, Fla., is the chancellor emeritus of the State University System in Florida. He was honored with the 2004 Service to American and World Agriculture Award by the National Association of County Agricultural Agents. York continues to focus on alleviating world hunger by expanding production to meet rapidly growing needs. York served as an adviser to Presidents Kennedy, Johnson, Nixon, Ford, Carter, and Reagan.

1950s

Harry Merker '51 of Las Vegas, Nev., is a member of the Cornell Continuing Reunion Club. He returns to Ithaca for each reunion and takes part in the Alumni Basketball Game. Merker is also proud to report that part of New York State Route 96 is being renamed in honor of his WWII 96th Infantry Division.

Dr. Randolph Barker '53 received Phillips Exeter Academy's highest honor, the John Phillips Award, on October 12, 2004. The citation read, "Today, it is our honor, as an institution dedicated to providing the best possible education . . . to recognize you as one who has united joyful pursuit of knowledge with deep concern for the welfare of humanity. . . ."

Anne LaBastille '55, PhD '69 of Westport, N.Y., visited campus for Earth Week in 2004. She held a book reading and signing for her latest work, *Woodswoman IV*. She also held a board meeting for her nonprofit organization, Save Lake Atitlán, Inc., which seeks to improve the pollution at Lake Atitlán, Guatemala.

1960s

James W. Caslick M Ed '62, PhD '72 of Powell, Wyo., and his wife are involved in wildlife management projects in Grand Teton and Yellowstone National Parks, where they have been wintering since 1988.

John F. Austin '65 of Huguenot, N.Y., has been married for 30 years. He and wife, Margie, have a son and three daughters.

1970s

Richard A. Peterson '70, Trumansburg, N.Y., was recently named president of the New York State Agricultural Society. He was manager of agricultural market services at NYSEG for 23 years, retiring in 2003. He runs his own business, Northeast Agriculture Technology Corporation, based in Ithaca. Peterson is active with the Farm Bureau, a board member of Cornell Cooperative Extension of Schuyler county, and is chair of the NY FarmNet board and the advisory board chair of the New York Center for Agricultural Medicine and Health in Cooperstown.

John G. Boreman, Jr., MS '72, PhD '78 of Falmouth, Mass., is the director of Northeast Fisheries Science Center. The center conducts research to better understand the living marine resources of the area.

Dr. Michael D. Steiner '77, MD '81 of Burien, Wash., is a physician with the Burien Eye Clinic located in Mercer Island, Wash.

1980s

Reginald Fils-Aime '83 of Kirkland, Wash., joined Nintendo of America a year ago and

was recently recognized in *Advertising Age* and *The Wall Street Journal* for helping to reinvigorate the company.

Barbara M. Frank '83 of Summit, N.J., earned her M.S. degree from California State University Fresno. She is now a regional sales manager and consulting wine maker for Chateau Frank and Dr. Konstantin Frank Wineries.

Brian P. Baker PhD '85 of Eugene, Ore., suffered the loss of both his mentor, **David Allee '53, MS '54, PhD '61,** a professor in the Department of Applied Economics and Management; and his father during 2003. "Words cannot describe what I still feel for the loss of David Allee," Baker said. His job as a research director at the Organic Materials Review Institute allows him to travel frequently where he sees fellow CALS alumni at conferences.

James W. Howe '86 of Rochester, N.Y., has been appointed executive director of the Nature Conservancy's central and western New York chapter. Howe will be responsible for the planning, funding, and implementation of programs to protect natural areas and landscapes of central and western New York.

Fabio Ausenda MS '88 of Milano, Italy, is working as the publisher of *Green Volunteers: The World Guide to Voluntary Work in Nature.* This guide is a resource that links volunteers with projects around the world.

Ed Staehr '88, MPS '94 of Cayuga, N.Y., has been named communications director of the NY FarmNet/NY FarmLink programs housed in the CALS Department of Applied Economics and Management. He is the former ALS Alumni Association president and was agriculture team leader at Cornell Cooperative Extension of Onondaga County.

1990s

Richard W. Dinneny MS '90, of North Vancouver, B.C., Canada, keeps busy with his children: Patrick (6), Isabel (4), and Michael (2). He is a portfolio manager with British Columbia Investment Management Corp.

Andrea J. Lillo '90 of Brooklyn, N.Y., has recently started a new job as an account executive at Susan Grant Lewin Associates, a public relations firm based in New York City.

Dr. Stephen G. Schwartz '91 of Naples, Fla., recently moved to Naples with wife, Melanie Rebak Schwartz (HuEc '90), and daughter, Jessica. He is now the medical director of the Bascom Palmer Eye Institute Retina Center and an assistant professor of clinical ophthalmology at the University of Miami School of Medicine.

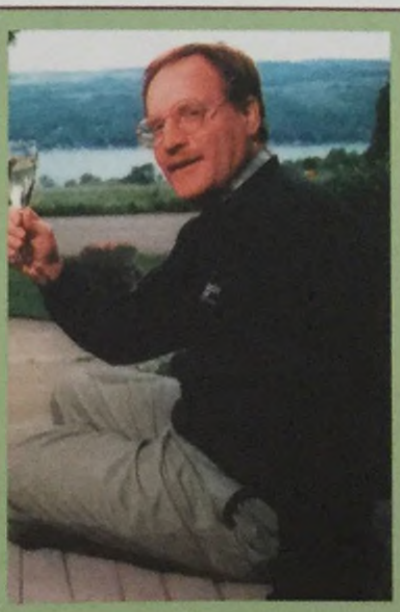
Melissa Dills Boglioli '94 and James A. Boglioli '95 of Franklin Square, N.Y., are the proud parents of a two-year-old son, James Jr. Melissa is an environmental consultant for Dru Associates, and James is an environmental lawyer in Mineola, N.Y.

Carlos A. Gonzalez '94 of Alexandria, Va., completed his Ph.D. at Yale University. He is now working with the Foreign Agricultural Service of the U.S. Department of Agriculture as an international marketing specialist.

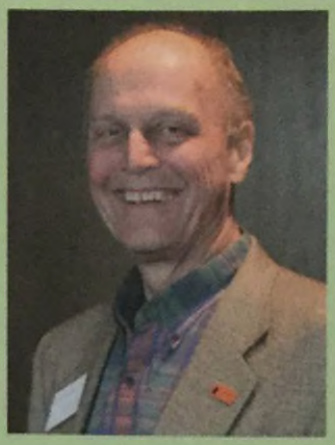
Amy S. Miller '95 of Waikoloa, Hawaii, is working as a supervisor for the education department of Dolphin Quest, an international organization dedicated to public education and conservation of marine wildlife.

Elizabeth A. Ceccacci '96 of Milford, Conn., recently married and now goes by **Elizabeth C. Orelup.**

Frederick R. Frank '79 of Hammondsport, N.Y., was honored recently as "Man of the Year" by the world-famous French Restaurant, Les Halles, and inducted into the restaurant's Hall of Fame at a dinner on January 11 in New York City. Frank is a third-generation president of Dr. Konstantin Frank Wine Cellars. This Finger Lakes winery was recently named "Greatest Producer in the Atlantic Northeast" by the *Wine Report 2005.* Frank also serves on the CALS Advisory Council and the ALS Alumni Association board of directors. He lives in Painted Post, N.Y., with his wife, Maryclaire, and their children: Meaghan, Gretchen, and Kyle. For more information about Dr. Konstantin Frank wines, go to www.DrFrankWines.com.



Remembering Otto Schneider '55



On March 29, 2005, current ALS Alumni Association board of directors member Otto Schneider '55, died after a long battle with cancer. After serving for two years on the Association's Awards Committee, Schneider joined the board of directors in 2003 to represent the northern New Jersey area. He brought an infectious enthusiasm and a willingness to get things done in both his work on the Awards Committee and then in his role of organizing activities for CALS in northern New Jersey.

Before becoming active with the college, Schneider had a long and involved career as a volunteer for Cornell. He was active through the local Cornell Club, as an officer for the class of 1955, and as a vice-president for the Cornell Association of Class Officers (CACO). Schneider is credited with introducing several innovative programs to CACO's annul Mid-Winter Meeting, which are helping to ensure that Cornell has well-trained class leaders for years to come.

Schneider also was a member of University Council and active with the Cornell Public Service Center. While on Council, he served on its Sustainable Development and Environmental Stewardship Committee. He became an avid supporter of the environmental research and education at Cornell and helped re-direct and energize the committee to address the university's work in the environment.

Schneider's great volunteer contributions to CALS and Cornell are truly missed.

Dawn A. Chavez '96 of Boston, Mass., is in her third year of a PhD program in environmental studies at Antioch New England Graduate School in New Hampshire. She is also directing the education program for the Urban Ecology Institute in Boston.

Jennie R. Cramer '96 of Corvallis, Ore., is a graduate student in the field naturalist program at the University of Vermont.

Vance A. Russell, MS '96 of Davis, Calif., has been managing Audubon-California's Landowner Stewardship Program since 2003. He and wife, Emma, like to bike ride in their spare time. Russell is the current director of the Davis Bike Club race team.

Joshua Winchell, MS '96 of Arlington, Va., left his position as director of the outdoor ethics program for the Izaak Walton League of America. He began a new position with the U.S. Fish and Wildlife Service, Division of Federal Assistance.

Cristian I. Castillo Davis '97 of Cambridge, Mass., received his PhD in organismic and evolutionary biology in the fall of 2003 from Harvard University. He now works in experimental analysis of gene network evolution and function. He founded Gene Merge, Inc., in 2002. He has presented lectures on his work at universities in the United States and abroad, including Tsinghua University, Stanford, Radcliffe, Harvard, Cornell, University of Chile, and others. He is also pursuing his second postdoctorate in statistics at Harvard.

Jason M. Goldklang '97 of New York, N.Y., is the co-founder and vice president of operations for Hudson Medical Communications. The company provides strategic marketing and continuing education programs to the healthcare community.

Gregory S. Newman '97 of Flagstaff, Ariz., completed his MS at the University of Kentucky. He is pursuing a PhD at Northern Arizona University.

Lee Ann Schwartz '97 of Oradell, N.J., had her first child, Matthew, on March 16, 2004. She hopes he will be a member of the Class of 2026! She is now mastering the art of being a working parent.

Andrew J. Sofield '97 of Cambridge, Mass., graduated from the Kellogg School of Management in June 2004. After graduation, he returned to consulting at DiamondCluster International.

Richard L. Erickson '99 of Klawock, Alaska, is planning to attend law school this fall. He will be participating in the Pre-Law Summer Institute at the American Indian Law Center to prepare.

Sara K. Krause '99 of San Mateo, Calif., will be attending UC Davis in the fall to pursue a PhD in ecology. She has been working as a field research assistant on Santa Cruz Island in California.

2000s

Courtnay E. Hull '00 of Medford, N.Y., is studying at the Marine Science Research Center at Stony Brook University on a full-tuition scholarship.

Johanna L. Mendillo '00 of Chestnut Hill, Mass., is the program manager for Boston's Environmental Ambassadors to the National Park Service. She is hoping to enroll in a master's program to become certified to teach high school science.

Brooke A. Zanetell, MS '00, PhD '03 of Washington, D.C., began a new position with the State Department as an oceans affairs officer working in the Bureau of Oceans and International Environmental Scientific Affairs.

Beth A. Lawrence '01 of Corvallis, Ore., is pursuing graduate studies in botany at Oregon State University with funding from a National Science Foundation Fellowship.

James A. H. Hafner PhD '02 of Hadley, Mass., is a visiting professor at Central Connecticut State University but living up the road in western Massachusetts. He is hoping to find a permanent academic position in the New England area or outside of academia.

Maya Savanner-Ruth Martin '02 of Griffin, Ga., is now a second-year student at Tuskegee School of Veterinary Medicine.

David J. Nicola '02 of Chatham, N.J., is working as an investment banking financial analyst at Citigroup in the paper, packaging, metals, and mining group.

Laura Saldivar-Tanaka MS '02 of Ithaca, N.Y., is conducting research about production practices and use of natural resources on rural communities in the Lacandon Forest of southern Mexico.

Michele Sutton MAT '02 of Ithaca, N.Y., was named the Agriculture Teacher of the Year by the New York State Association for Agriculture Educators. She works in the Southern Cayuga School District where she secured a $17,000 state grant to support agricultural education and plans to use the money to purchase a greenhouse to develop a horticulture program. Sutton was also active in forming the district's Agriculture Advisory Board and the Future Farmers of America Booster Club.

Martin Michael Traynor MS '02 of Cleveland, Ohio, married his girlfriend, Carol, in the Grand Canyon in May 2003. Traynor previously worked as an environmental scientist and wetland restoration specialist, but recently accepted a new position with the Cleveland Museum of Natural History.

Liz Bowman Abbett '03 of Gostivar, Macedonia, is serving as a Peace Corps volunteer with the Permaculture and Peacebuilding Center in Gostivar, which has the overall mission of caring for the earth and caring for people.

Elena Chernobrovkina MS '03 of New York, N.Y., is living in Buryatia, Siberia, teaching a course in ecotourism in the Department of Foreign Languages at Buryat State University.

Ana Cordova MS '97, PhD '03 of Mexico is the director of Ecological Ordering at the National Institute of Ecology at Semarnat, which is the Mexican equivalent of the Environmental Protection Agency.

Moving?

Stay in touch with your alma mater through uninterrupted delivery of *CALS News* by returning the change-of-address form. Mail to Cornell University, College of Agriculture and Life Sciences, Office of Alumni Affairs, 274 Roberts Hall, Ithaca, NY 14853-5905.

Name _____

Class Year _____

I.D. # _____

☐ Alum ☐ Faculty ☐ Friend

Former Address _____

New Address _____

Phone _____

Cristina R. Faustino MS '03 of Ithaca, N.Y., is working as a temporary employee for the Human Dimensions Research Unit in the Department of Natural Resources at Cornell.

Jennifer Cahlia Gerbasi MPS '03 of Washington D.C., is working for the Harrison Institute of Public Law in Georgetown, Md. Most of her work focuses on domestic and international water laws.

Deborah L. Gross MS '03 of Ithaca, N.Y., is the environmental planner for the town of Dryden, N.Y. She is also collaborating with the U.S. Geological Survey on an aquifer study. Gross recently traveled to southern India to learn about several water-related issues.

Heather L. Hermann '03 of Jackson, Mich., earned her Master of Accounting degree in June 2004 from Ohio State University. She is working as a staff auditor at Rehmann Robson, a Michigan-based CPA firm, as a staff auditor in the commercial auditing group.

Katie M. Knight MPS '03 of Bremerton, Wash., is an assistant conservation director for the Whatcom Land Trust in Bellingham, Wash. She monitors 7,000 acres of land that the trust oversees and assesses functioning salmon habitat in local rivers.

Zev Ross MS '03 of Ithaca, N.Y., has set up his own consulting business to provide environmental statistics and mapping expertise to nonprofits, universities, and government agencies.

Ivanna Tomashchuck MPS '03 of Ukraine is teaching in the Agriculture and Natural Resources Department at the Institute of Natural Resources Management in Kolomyya, Ukraine.

Frederick R. Werner MS '03 of Chevy Chase, Md., is working on the eco-agriculture assessment project in the Department of Natural Resources.

Benjamin E. Wolfe '03 of Ontario, Canada, received a National Science Foundation graduate research fellowship. He is in a PhD program at the University of Guelph in Ontario

Anthony

Sherida Porpiglia '05
Alumni notes student writer

Taste of CALS

Tim Oonk

A student takes the challenge of seeing how fast he can drink a half gallon of milk from the Alpha Gamma Rho (AGR) fraternity booth during the "Taste of CALS Fair."

The CALS Centennial Celebration culminated for the campus community on April 29 with a "Taste of CALS Fair" on the Ag Quad. CALS student organizations and departments hosted game and information booths and over 1100 barbecue lunches were served. The fair was followed by the Age of Innovation Symposium in the David L. Call Alumni Auditorium. The CALS Centennial Campus Committee deserves great thanks for all their efforts throughout the year, which began with the Centennial parade in May 2004.

Tim Oonk

Peter Ten Eyck II '60 and Helen Lee '03 converse at the CALS Centennial Celebration in Albany, N.Y., on March 2, 2005. Ten Eyck, Cornell trustee emeritus, served as moderator for the celebration's faculty panel.

The college, with support from the ALS Alumni Association, hosted five regional Centennial Celebrations that included New York City, Syracuse, Albany, Washington, D.C., and Boston. Each celebration featured Dean Susan Henry and three faculty members from the various departments in the college. Nearly 500 alumni and friends joined us at the events.

End Note

Courtyard Café Is Abuzz with a New Brew

Chris Hellman, University Photography

Considering the amount of construction at CALS these days, the site of a trailer is hardly noteworthy — unless it happens to be a refurbished 1948 Spartan Manor airstream trailer advertising Gimme! Coffee nesting where the walls of Emerson Hall, the Plant Science building, and Mann Library form what, until recently, had been a space with all the aesthetic charm of a prison yard.

Now *that's* a conversation piece.

It's also the second step in a cooperative concept called the Courtyard Café—an effort, according to Professor Susan McCouch PhD '90, "to transform a barren, wind-swept plaza into an attractive vibrant place for people to sit, read, enjoy a cup of coffee, have a meeting or a chance encounter with a colleague." McCouch is Cornell professor of plant breeding and genetics and member of the Courtyard Café Committee, the group that agitated for the spatial upgrade.

Gimme opened for business in early March when snow still mantled the outdoor tables and chairs that had arrived as part of the initial phase of converting the plaza. But, fast forward to May, when fair weather allowed for exactly what planners envisioned: a charming outdoor café enhanced by urban landscaping, art exhibits and, of course, some primo java.

The effort is truly a cooperative venture. A committee consisting of about 15 faculty, staff, and students shepherded the idea through a variety of unforeseen challenges over the last two years.

Dean Susan Henry's office provided financial support, as did Mann Library administration and 10 department chairs in the immediate vicinity of the courtyard. The site will become a major landscaping project for students in Horticulture, and Landscape Architecture, led by Nina Bassuk '74, professor of horticulture, and Peter Trowbridge, professor of landscape architecture.

Gimme! Coffee owner Kevin Cuddeback calls the mobile coffee unit Gimme V — it's his fifth operation since opening the first Gimme shop in downtown Ithaca. Gimme! Coffee was first distributed on campus in Statler Hall and in Goldwin Smith Hall's Temple of Zeus café. Some will tell you Gimme is Ithaca's equivalent of Starbucks; others will tell you Gimme's brews are better.

Transforming a trailer into an espresso-friendly unit took about six months of intensive labor. But the Courtyard Café probably won't be Gimme V's permanent place of business. A future café is planned for Mann Library, and once that is up and running, Gimme V will take its show on the road.

Franklin Crawford

A special membership offering from the ALS Alumni Association for moving into

The Next 100 Years

for the College of Agriculture and Life Sciences at Cornell

(For current members, the 10-year membership will begin following your current membership term.)

The ALS Alumni Association

Your ALS Alumni Association exists to promote fellowship and leadership among alumni and students and to advance the teaching, research, and extension functions of the College of Agriculture and Life Sciences.

Membership in the Association directly impacts the College through scholarship support for students, an awards program for recognizing outstanding alumni, and faculty, support for CALS faculty members to meet and speak with alumni in local areas and general support for the College's priorities.

As the College's year-long Centennial Celebration winds down, the ALS Alumni Association encourages our members and all CALS alumni to be looking forward to what the next 100 years will bring for the college through a special membership offering:

10-year membership in the ALS Alumni Association for $100

This is a limited membership offer until October 1, 2005!

Membership Form

☐ 10-yr $100

Other membership levels available:

☐ 2-yr $29 ☐ Lifetime $350

☐ 4-yr $54

Name _____

Class Year/s _____

Street _____

City _____

State/Zip _____

Telephone _____

County _____

Please make your check payable to the ALS Alumni Association or pay with a credit card:

☐ Discover Card ☐ MasterCard ☐ VISA

Expiration Date _____

Account # _____

Signature _____

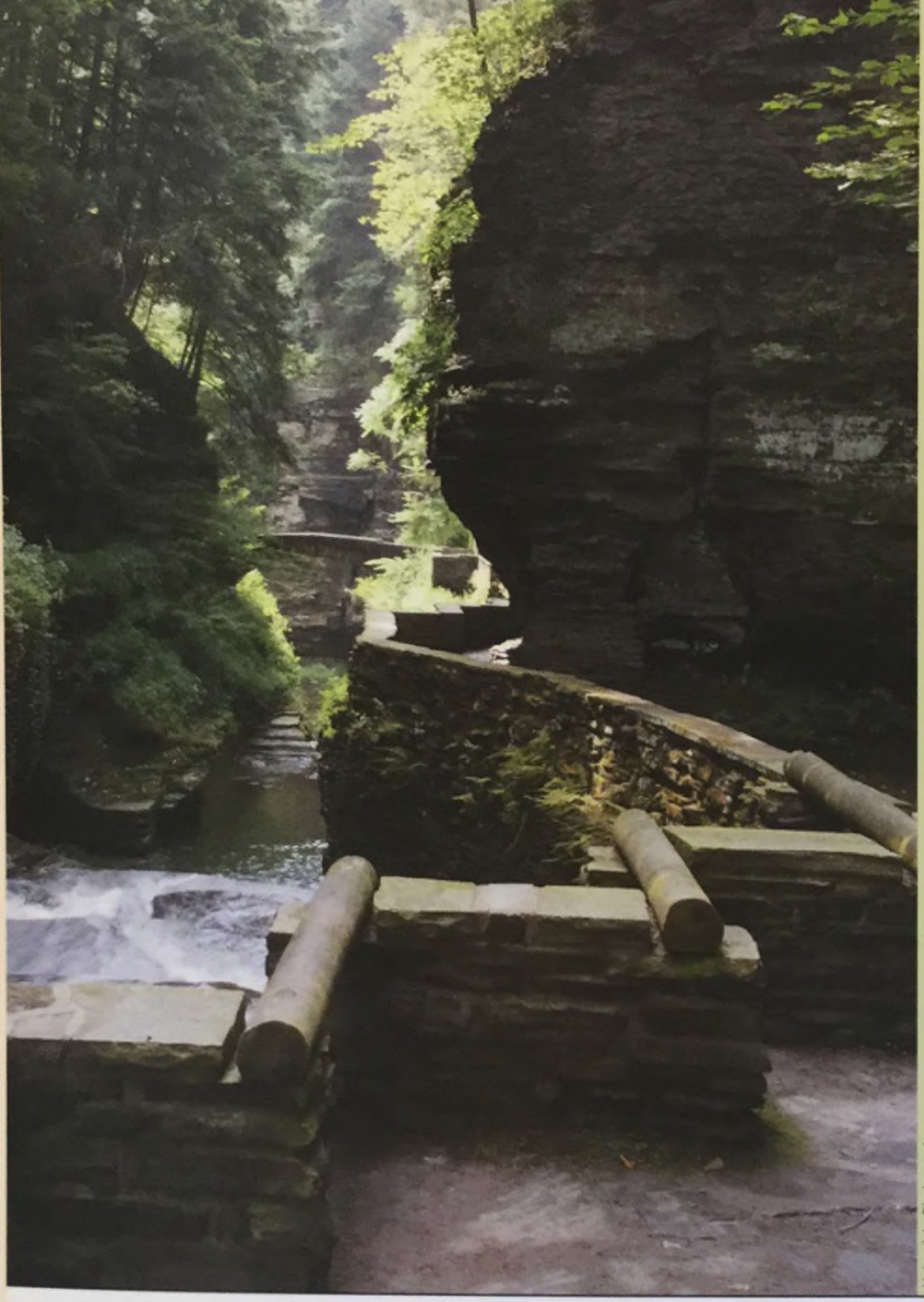
Mail to: Office of Alumni Affairs, 274 Roberts Hall, Ithaca, NY 14853-5905

Gift Membership to the ALS Alumni Association of the College of Agriculture and Life Sciences at Cornell University

To: _____

From: _____

Illustration by William Benson and photos provided by Alumni Affairs, Development, and Communications



Univeristy Photography

Stay connected via E-mail!

- Are you interested in receiving our monthly e-mail newsletter with the latest news from CALS and Cornell?
- Would you like to receive invitations to local alumni events via e-mail?

If so, please send an e-mail to us at alsaa@cornell.edu and request to be signed up for the alumni list-serv. Your e-mail address will not be publicized and will be used only for official university correspondence.

Visit the college's new web site at

www.cals.cornell.edu

Cornell University
College of Agriculture
and Life Sciences

Alumni Affairs, Development and Communications
274 Roberts Hall
Ithaca, New York 14853-5905

Change Service Requested

NONPROFIT ORG
U.S. POSTAGE
PAID
Ithaca, NY 14850
Permit No. 34