

CORNELL Chronicle

Volume 27 Number 35 May 23, 1996

HUMAN RESOURCES APPOINTMENT

Senior Vice President Frederick A. Rogers has announced the appointment of Mary George Opperman, currently director of employee services at Harvard University, as associate vice president for human resources. She will begin her Cornell position July 15.

HONORING ACHIEVEMENT

A sampling of honors given to students and faculty.

BREAKING NEWS

10



Charles Harrington/University Photography

A new six-story, 90-ton radome, in white, is in place at Arecibo Observatory. Part of a major upgrade, the radome houses a new system of optics that makes the radio-radar telescope even more powerful and sensitive. The structure was hoisted 450 feet above the reflector dish on May 16.

Arecibo Observatory's upgrade nears completion

By Larry Bernard

The Arecibo Observatory, home of the world's largest radio-radar telescope, has moved close to completion of a major upgrade that makes it one of the most sensitive and powerful tools ever designed for astronomical studies.

The observatory, operated by Cornell's National Astronomy and Ionosphere Center under a cooperative agreement with the National Science Foundation (NSF), recently completed installation of a new system for focusing incoming radio waves that will open new doors to the universe.

On May 16, the 90-ton, 85-foot diameter Gregorian system enclosure was hoisted from the bottom of the 1,000-foot diameter reflector to its working position 450 feet above, on the azimuth arm. The lifting process took about two hours, starting in the pre-dawn mist at 6:10 a.m. The construction work, part of a \$25 million upgrade of the Arecibo telescope financed by the NSF and NASA, was begun in 1993.

COMSAT RSI of Sterling, Va., is prime contractor for the work.

Remember that big dish that appeared out of a lake, then was blown to bits in the climactic scenes of the James Bond movie *Goldeneye*? Well, the giant dish remains (although it doesn't rise from under water—it's fixed in a huge sinkhole in the hills of northwest Puerto Rico), but the system suspended above it to focus the radio waves collected by the 1,000-foot-diameter (305-meter) reflector has been radically changed.

Now, a new six-story, 90-ton dome—suspended 450 feet above the reflector dish—houses a new reflector system, a combination of two radio mirrors and sensitive receiver systems. The mirrors focus radio waves coming from distant objects in space, or radar signals that are sent out into space and bounce back from the surfaces of the planets and other bodies in the solar system. "First light" is expected by the end of August.

"We are delighted that we will soon have a new much more sensitive and versatile telescope," said Paul Goldsmith, director of

the National Astronomy and Ionosphere Center and Cornell professor of astronomy. "It will open a new era of radio astronomical observations of pulsars, distant galaxies and our own galaxy. We are looking forward to a host of new discoveries."

Also, "The new radar system will have a tremendous capability to image Earth-approaching asteroids and comets," said Don Campbell, associate director of the center, as a 1-km asteroid is set to pass within 2 million miles of Earth on May 25.

The upgrade includes a doubling to 1 megawatt of the power of the transmitter used for radar studies of the solar system, a 50-foot-high stainless steel mesh fence (called a ground screen) to reduce the effects of interfering radio noise emitted by the ground around the perimeter of the reflector dish, reinforcement of the existing 600-ton suspended structure and installation of additional supporting cables to carry the added weight of the dome. The fence was installed in 1993.

Continued on page 6

Reunion '96 celebrated June 6 to 9

By Jill Goetz

Reunions have always had the potential to provoke revelation as well as nostalgia. In that one regard, Cornell Reunion 1996 will be just like any other.

The 5,500 alumni and guests expected to converge on campus June 6 through 9 will reunite with former classmates and professors, revisit favorite haunts and commemorate longstanding institutions and traditions; but they also will encounter a new president, an expanded College of Veterinary Medicine and a host of other changes to Cornell's faces and places.

As at reunions long past, returning alumni can compete in golf and tennis tournaments, an alumni baseball game and a Reunion Row; take guided tours of the Cornell Plantations, Lab of Ornithology and local wineries; and take cruises on Cayuga Lake. And, of course, there will be gastronomic functions galore, from clambakes to Mexican fiestas. One of the best attended of these will be the annual all-alumni luncheon at noon on Friday and Saturday in Barton Hall.

Attendees also can indulge in a smorgasbord of educational forums, symposia and lectures at Reunion. In one of the weekend's highlights, Beverly Sills, opera star and Lincoln Center board chair, will deliver the annual Spencer T. and Ann W. Olin Lecture on Friday, June 7, at 3 p.m. in Bailey Hall (see page 2).



Sills

Other featured speakers will include New York State Assemblyman Marty Luster and State Sen. James Seward at the dedication of the Veterinary Medical Center and former White House press secretary Marlin Fitzwater at a Law School alumni dinner. (His address is open only to preregistered Law School alumni.)

But the focus of Reunion festivities will be on the alumni themselves, particularly those from classes ending with a "1" or a "6."

According to Margaret M. Gallo '81, director of reunions and alumni programs, many of the 52 attendees expected from the classes of 1926 and 1931 will have their memories and experiences recorded for posterity in a first-ever Reunion archival program.

"Preserving the Past, Creating the Future," the brainchild of alumnae Carolyn Neuman '64 and Alice Berglas '66, will pair up alumni from the classes of '26 and '31 in one-on-one interviews with alumni from the class of '66. The interviews will be conducted on Friday and will be audiotaped, transcribed and maintained at Cornell for use in future projects.

Elsewhere on Friday, alumni can join President Hunter Rawlings, Veterinary College Dean Franklin Loew and some special canines for the dedication of the Cornell Veterinary Medical Center, which was recently completed following a \$90 million construction and renovation project. On Saturday, alumni can join President Emeri-

Continued on page 2

The big weekend for 6,000 graduates is finally here

Here is an abbreviated schedule of this weekend's 128th commencement events. On Sunday, President Hunter Rawlings will confer degrees on approximately 6,000 eligible candidates.

For more information about this weekend's schedule and activities, contact the Information and Referral Center in Day Hall at 254-4636.

Saturday, May 25:

• *President's Breakfast Reception:* On

the Arts Quad from 7:30 to 9:30 p.m.

• *Senior Convocation:* In Barton Hall, beginning at noon. Convocation address by Robert F. Kennedy Jr.

• *D.V.M. Hooding Ceremony:* In Alice Statler Auditorium, beginning at 4:30 p.m.

• *Ph.D. Recognition Ceremony:* In Barton Hall, beginning at 5 p.m.

• *ROTC Commissioning:* In the David L. Call Alumni Auditorium of Kennedy Hall, beginning at 4 p.m.

Sunday, May 26:

• *Baccalaureate Service:* In Bailey Hall at 8:30 a.m. Susannah Heschel of Case Western Reserve University will speak at the service.

• *Commencement Procession:* Beginning at 9:30 a.m., proceeds from Arts Quad to Schoellkopf Field.

• *Commencement Ceremony:* In Schoellkopf Field from 11 a.m. to noon. President Rawlings will give his first Cornell commencement address.

OBITUARY

Robert Bechhofer, professor emeritus in the School of Operations Research and Industrial Engineering, died May 13 at age 77, following a six-year struggle with Parkinson's disease.

He received his B.A. and Ph.D. from Columbia University and taught there for one year before coming to Cornell as an associate professor in 1952. He served as chairman of the Operations Research Department from 1967 to 1977 and continued teaching until his retirement in 1989. His particular professional interest was in statistical ranking and selection procedures. He authored three books and over 70 technical articles in that area.

His lifelong interest in art was reflected in an extensive collection of 20th century graphic art, much of which was donated to the Herbert F. Johnson Museum of Art.

He is survived by his wife, four children and three grandchildren.

A memorial service will be held in Anabel Taylor Chapel, Thursday, June 6, at 4 p.m. Donations in his memory may be made to the Robert Bechhofer Graduate Computing Laboratory Fund in the School of Operations Research, the Finger Lakes Land Trust or the American Parkinson's Disease Association.

Say hello to Hollywood



Adriana Rovers/University Photography

Academy Award-nominated writer/producer/director Melville Shavelson '37, left, speaks with film students in the Advanced Undergraduate Film Program during a campus visit May 13. Shavelson's support has allowed the film program to purchase sophisticated new equipment and create the Melville Shavelson Film Awards. With Shavelson, from left, are Charlene Sun '96, one of this year's award winners, and Marisue Taube, director of development and public affairs for the College of Arts and Sciences.

BRIEFS

Alumni trustees: The Committee on Alumni Trustee Nominations has announced that this year's voting has been concluded, and the two new alumni-elected members of the Board of Trustees are Elizabeth G. Armstrong '68 and Robert T. Blakely '63, BME '64, MBA '65. They will begin four-year terms July 1.

Summer hours: Beginning May 28 and continuing through Aug. 27, the Office of Transportation and Mail Services will open at 7:30 a.m. and close at 4 p.m. Regular hours of operation (7:30 a.m.-5 p.m.) will resume Aug. 28.

New addresses: Several campus offices and programs have moved recently, and Transportation and Mail Services wants people to be aware of the changes. Here's a listing of those programs, with former addresses listed first, followed by new addresses: Latino Studies from Sage Hall to 472 Caldwell Hall; Finance and Business Office from Mann and Warren halls to Surge III; University Registrar Technologies Ser-

vices from 14 East Ave. to 420E Computing and Communications Center (C. Uber), 424 CCC (M. John Testa and D. Barnard) and 222 Day Hall (J. Merrill); International Students and Scholars Office (ISSO) from Barnes to B50 Caldwell; Cornell-in-Washington and American Studies Program from 131 Sage to 471 Hollister; Graduate School from Sage to Caldwell; Cornell Institute for Public Affairs from 132 Sage Hall to 473 Hollister Hall; Learning Skills Center from Sage Hall to 420 CCC; Council for the Arts from 310 Sage Hall to 341 Caldwell Hall; Public Service Center from 14 E. Ave. to 200 Barnes Hall; the Office of Instructional Support from 14 East Ave. to CCC.

Summer Seniors Program: Anyone who is at least 60 years of age may enroll in Cornell courses this summer at a reduced tuition rate through the Seniors Program. This program is for senior citizens who would like to attend classes at Cornell but are not interested in earning college credit.

During the summer, Cornell welcomes students of all ages: adults and youngsters at Cornell's Adult University (CAU), high school students attending Summer College, professionals in a variety of fields, and undergraduates from many colleges and universities, among others. With the instructor's approval, seniors can take courses offered in subjects ranging from African languages to women's studies. A registration fee of \$50 per credit is due at the time of course registration. No transcript, grade record, or proof of attendance in the class will be kept. Registration and instruction for the eight-week session begins June 10, and the six-week session begins June 24. For more information, call 255-4987; write to the Cornell University School of Continuing Education and Summer Sessions, B20 Day Hall, Ithaca, N.Y. 14853-2801; e-mail <css@sce.cornell.edu> and ask specifically about the Seniors Program; or visit the Web site at <<http://www.sce.cornell.edu/CUSS>>.

Reunion *continued from page 1*

tus Frank H.T. Rhodes in the Field House for the dedication of the Richard M. Ramin Room, named for the late alumnus from the class of 1951 who was a longtime vice president for public affairs at Cornell.

Other events have been scheduled throughout the weekend to mark the 50th anniversary of the School of Industrial and Labor Relations and the 25th anniversary of both the Holland International Living Center and the Center for Religion, Ethics and Social Policy.

For alumni who wish to return to the classroom, there's Saturday's Reunion Symposium, "Gender Issues in the Workplace," from 2:30 to 4 p.m. in the David L. Call Alumni Auditorium of Kennedy Hall.

Cornell's colleges and celebrated classes will offer their own forums, including "Women's Health Issues in the '90s" (class of 1971) and "Politico Phobia: The Election of 1996 and American Studies" (Arts and Sciences). Cornell Library will offer tours and exhibitions, including "Invention and Enterprise: Ezra Cornell, a 19th-Century Life" and "The Virtual Museum at Cornell," a digital imaging demonstration of the array of artwork available at Cornell's renowned Herbert F. Johnson Museum of Art and at other museums.

What's more, alumni can attend several summer session classes on topics ranging from art history to the art of publication, money and credit to real estate law, Shakespeare's plays to feminist philosophy, and lost tribes and sunken continents to the geology of Beebe Lake.

Although many scheduled programs will attract alumni from particular class years or colleges, attendance at some events is likely to span the alumni spectrum. At 10:30 a.m. on Saturday in Bailey Hall, Rawlings, inaugurated as Cornell's 10th president nearly a year ago, will deliver his first State of the University Address at a Cornell Reunion. That evening in the same location, Cornelliana Night will feature songs from the Alumnae Chorus and Alumni Glee Club and comments from Rawlings.

"We want people to go away with a renewed sense of what it means to be a Cornellian," Gallo said of organizers' hopes for Reunion 1996.

The same goes for alumni who stay behind. Hard as it is for them to believe, in a few weeks Gallo — and this writer — will be celebrating their own 15-year Cornell Reunions.

Complete information about Reunion '96 can be found at the Web site <<http://www.cornell.edu/Events/Reunion/>>.

CORNELL Chronicle

Henrik N. Dullea, Vice President for University Relations
Linda Grace-Kobas, Director, Cornell News Service
Simeon Moss, Editor
Larry Bernard, Science Editor
Jacquie Powers, Education Editor
Karen Walters, Editorial Assistant
Dianna Marsh, Circulation
Writers: Blaine P. Friedlander Jr., Darryl Geddes, Jill Goetz, Susan Lang, Roger Segelken and Bill Steele.

Published 42 times a year, the *Cornell Chronicle* is distributed free of charge on campus to Cornell University faculty, students and staff by the University News Service.

Address: 840 Hanshaw Road, Ithaca, NY 14850
Phone: (607) 255-4206
Fax: (607) 257-6397
E-mail: cunews@cornell.edu
Web site: <http://www.news.cornell.edu>

Mail Subscriptions:

\$20 per year. Make checks payable to the *Cornell Chronicle* and send to Village Green, 840 Hanshaw Road, Ithaca, N.Y. 14850. Second-Class Postage Rates paid at Ithaca, N.Y. POSTMASTER: Send address changes to the *Cornell Chronicle* (ISSN 0747-4628), Cornell University, 840 Hanshaw Road, Ithaca, N.Y. 14850.

Copyright Notice:

Permission is granted to excerpt or reprint any material originated in the *Cornell Chronicle*.

Cook Awards winners



Six women were honored April 26 as recipients of the fourth annual Cook Awards, presented by the Advisory Committee on the Status of Women (ACSW), for their contributions to the Cornell community, particularly those that influence women and/or women's issues. Seated in front are, from left, Alice H. Cook, professor emerita of labor and industrial relations, and Constance Cook, former Cornell vice president, for whom the awards are named. Winners, rear from left, are Briana Barocas, Rebecca Rosenberg, Rhea Park, Barbara Ward, Michele Fish and Sharon Dittman.

Sills will give Olin Lecture

Beverly Sills, one of this century's greatest coloratura soprano opera singers and chair of the board of the Lincoln Center for the Performing Arts, will deliver the Spencer T. and Ann W. Olin Lecture on Friday, June 7, from 3 to 4:30 p.m. in Bailey Hall Auditorium.

Her lecture is titled "The Future of the Arts in a Downsized World."

A limited number of tickets for Sills' lecture will be available at class headquarters at the start of Reunion Weekend.

Sills has performed in all of the world's leading opera houses and recorded 18 full-length operas as well as several solo recital discs. Her honors include the Edison Award for Best Operatic Album of the Year, a Grammy Award and the Presidential Medal of Freedom.

In 1980, she was named general director of the New York City Opera and presided over the city's Opera Board in 1989-90.

She currently serves on the boards of several artistic and corporate organizations, including the Metropolitan Opera Association and American Express. She also is the national chair of the March of Dimes Foundation.

The law of laughter



Photos by Adriana Rovers/University Photography

Above, Susan Morse Palmer, right, delivers the student address for the class of '96 at the Law School's Convocation ceremonies Sunday, May 19, much to the delight of her listeners: (from left, in the front row) Nan Colvin, Law School registrar; Winnie Taylor, professor of law; Cornell President Hunter Rawlings; and Russell Osgood, the Allan R. Tessler Dean of the Law School. Degrees were conferred on 224 graduates. They included Palmer and Hirohisa Yukawa, at right in robe, who is being congratulated after the ceremony by his friend Victor Addom '96, a graduate degree candidate from the College of Human Ecology who will take part in Commencement ceremonies this Sunday.



Soil-judging team wins a national title

By Blaine P. Friedlander Jr.

Cornell students won the National Championship of Soil Judging held April 26 at Oklahoma State University, Stillwater, Okla., scoring 2,060 points, beating second-place University of Wisconsin-Platteville, which scored 2,032. Third place went to Kansas State, followed by Texas Tech and Texas A&M universities.

The national championship featured 17 collegiate teams. Cornell's Ulrika Rinman, an exchange student from Sweden, took first place and Patricia Gossett placed eighth in the individual competition.

Sponsored by the Department of Soil, Crop and Atmospheric Sciences in the College of Agriculture and Life Sciences, the Cornell soil-judging team had previously won national championships in 1982 and 1962.

The contest required members of the team to describe soil layers to a depth of 1 meter, classify them, measure their qualities for agriculture, describe their landscape setting and identify possible limitations for uses in an urban development.

Team members, all undergraduates, and their hometowns are: Ulrika Rinman, junior, Värmdö, Sweden; Johanna Taylor, senior, Lawtons, N.Y.; Steve Dadio, senior, Bryn Mawr, Pa.; Joe Anderson, sophomore, Atchison, Kan.; Patricia Gossett, junior, Aberdeen, N.J.; and Amy Martin, junior, Kettering, Ohio.

"We were regional champions last fall, but going into this contest, we really had no expectation," said John Galbraith, coach of the team and a research support specialist in the Department of Soil, Crop and Atmospheric Sciences.

"We practiced hard, but this year we went to enjoy the trip and we seemed more relaxed than normal. It just all came together. Being relaxed was the key," Galbraith said.

Considering there are more than 18,000 soil series in the United States, soil judging is an exacting and challenging science, he said. Students also identified soil color, texture, structure and water table indicators.

Children of divorce are half as likely to go to top colleges, study finds

By Susan Lang

Children who do not consistently live with two biological parents are only half as likely to ever attend a selective college, even after researchers take into account factors such as income and parent education, according to a new Cornell study.

"The results suggest that students not living with two biological parents are educationally disadvantaged in a variety of ways," the researchers said. "We have known for some time that these students receive less education, but now we see they are less likely to attend a selective college as well. If this quality difference is reflected in later life income and other benefits, as other studies suggest, then these children will be disadvantaged in other life outcomes as well."

Dean Lillard, Cornell assistant professor of consumer economics and housing, reported the findings at the annual meeting of the Population Association of America in New Orleans on May 9. "Not only are these students far less likely to apply, be admitted and to attend college, but even given that they apply to college, they are substantially less likely to apply and attend a selective college," he said.

Lillard, with Jennifer Gerner, professor of consumer economics and housing, analyzed The High School and Beyond longitudinal survey of almost 12,000 high school seniors and almost 15,000 high school sophomores initially interviewed in 1980 and re-interviewed in 1982, 1986 and 1992.

After controlling for parents' income, employment and education, students' grade



Lillard



Gerner

point average, SAT scores, participation in sports and other extracurricular activities, and identifying the top 50 colleges in the nation, the consumer economists found striking differences between the two sets of students. They reported on these in their paper, "Family Composition and College Choice: Does it Take Two Parents to Go to the Ivy League?"

"Divorce turns out to be a marker for a whole array of factors that have a negative impact on later life outcomes," Gerner said.

She pursued this research after she noted that only 10 percent of the students in a large class at Cornell were from divorced households. She later discovered this same proportion among the entire undergraduate student body at Cornell, compared with the national average of almost 50 percent. When only students who go to college are considered, 38 to 40 percent are from divorced families, compared with the 10 percent at Cornell.

"Our analysis shows that it is not living without two biological parents itself that has this negative effect. Rather, it is the family disruption that influences a whole constellation of factors that are considered

'Divorce turns out to be a marker for a whole array of factors that have a negative impact on later life outcomes.'

— Jennifer Gerner

when students apply to college," said Gerner, who teaches a course on the economics of family policy pertaining to children. Gerner also is assistant dean for undergraduate and graduate students in Cornell's College of Human Ecology.

Students from divorced households, whether living with a step-parent or not, are generally less likely to score as well as students from intact families on grades, standardized tests, school activities and the other factors Lillard and Gerner considered.

In a related study, also conducted by Gerner and reported on at the PAA meeting by co-author Shelly Verploeg, the consumer economists compared how elementary and middle school children who experienced any kind of family disruption (parent separation, divorce, birth of a sibling, family move, grandparent moving out) fared on standardized tests compared with children who did not experience any significant disruption in their family life.

"We found that all these disruptions had significant negative impacts on children's scores. This is consistent with the notion that stability in a child's living arrangement matters," Gerner said. "Divorce is obvi-

ously a major family disruption, and we're finding that it consistently and systematically negatively affects a wide range of significant factors."

In the United States, about 40 percent of white children and 75 percent of black children can expect to live with only one parent or no parents by the time they turn 17. Although other studies have looked at family composition and its relationship to performance on tests, years of schooling and whether or not the child will drop out of school, this study is one of the first to look at family composition and the type of college a student is likely to attend.

Specifically, the researchers found that, after controlling for factors such as income and parent education, 28 percent of students living with two biological parents were likely to apply to a selective college, compared with 17 percent of students not living with two parents; 25 percent were likely to get in, compared with 14 percent of those living with one parent; and 2.2 percent of two-parent students were likely to ever attend a selective college, compared with only 1.1 percent of one-parent students.

Next, the Cornell consumer economists want to explore the implications of these findings for tomorrow's policy leaders.

"Students at the most selective colleges are most likely to become policy leaders, making vital decisions concerning welfare and other benefits for single-parent families. Yet these students are, much more than others, isolated from such families. How can they make informed decisions if they are so unfamiliar with the all-too-common disputed family?" Gerner asked.

GRADUATION 1996 STUDENT PROFILES

New vet hopes to form partnerships across disciplines

By Roger Segelken

Veterinary students get used to being kicked, clawed and stomped by animals they're trying to help. Lisa K. Wingate, D.V.M. '96, took her lumps, too, but nothing prepared her for the heartbreak of having a vital research project with African elephants torn from her grasp.

"I wanted to see what contribution veterinarians can make to field research in wildlife biology," the 28-year-old Winnipeg, Manitoba, native said, recalling the path that took her from the American Southwest and the Costa Rican rain forest to the nature preserves of South Africa. "Veterinarians understand the role of animals' parasites and infectious diseases — the aspects of health and physiology that have not been fully explored by wildlife biology — and that's where we can help. We can form cross-disciplinary partnerships in sciences where the tradition has been to work in isolation."

The daughter of two health professionals was on her way to becoming a social psychologist when the animal-medical "bug" bit. There was just one problem.

"I thought I would be 'bad with blood.' The sight of blood flowing turned me three shades of green," she said.

Working as a vet's assistant cured the blood phobia. Then, during the summer vacations from Cornell, Wingate turned to blood — and to even more distasteful excretions — as an unexplored window to the health status of wild animals.

She started out small, setting mist nets in Costa Rica's Curu Wildlife Refuge to study the foraging behavior of frugivorous (fruit-eating) birds and fingerprinting DNA to determine the parentage of pronghorn antelope in Utah. Her research subjects increased in scale when she met Katharine B. (Katy) Payne, the Cornell biologist who was studying well-digging behavior of African elephants. Wingate helped analyze already-collected data, trying to learn why elephants excavate for subsurface water even when ample supplies of fresh water stand nearby.

That led to a position at the Conservation and Research Center of Washington's National Zoo, where she performed hormone assays with zoo elephants' blood, urine and fecal samples.

Sifting through mammoth manure "is not very glamorous, but it's non-invasive and it is an emerging discipline," Wingate said of efforts to test an animal's endocrine status from what it leaves behind. For example, cortisol in samples can show whether the elephant is stressed, while progesterone levels in female samples indicate whether she is pregnant.

Collecting blood samples is relatively simple with captive elephants. Picking up feces and urine is safer with free-ranging and sometimes dangerous elephants where the hormone research took her next: to the Kruger National Park in South Africa. In that park all elephants over a predetermined herd size of 7,000 are culled and slaughtered each year — unless they are lucky enough to be translocated to



Lisa Wingate, D.V.M. '96, prepares one of the Vet College's ambulatory service vehicles for another day's visits to nearby farms.

Adriana Rovers/University Photography

'I wanted to see what contribution veterinarians can make to field research in wildlife biology.'

— Lisa Wingate

private game preserves. The International Fund for Animal Welfare (IFAW) hired Wingate in what was to be a multi-year project, using her hormone-monitoring technique to test elephants before and after their translocation.

Her South Africa project began in May 1995. At first park officials tried to bar her entrance, but Wingate prevailed and obtained samples from animals that were slated to be culled or translocated. The college agreed to juggle her schedule so that Wingate could return periodically to Africa and conduct the study through subsequent phases. But last August, the translocation was delayed, in part because shipping crates for the elephants were not ready. Wingate trained a South African assistant in sample-collection techniques, tried to "mend fences" with the national park officials and reluctantly came back to Cornell.

At an October IFAW meeting in Rome about the future of African elephants, the student's project was enthusiastically endorsed by some of the world's leading elephant researchers, including Iain Douglas-Hamilton and Joyce

Poole. Nothing, it seemed, but clear sailing lay ahead. Samples were being shipped back to Cornell labs, where physiology Professor David Robertshaw, who also is internationally noted for his research with African mammals, provided valuable guidance.

Abruptly, seven months into her research, the project was terminated by the conservation organization. The work had become "too political," Wingate was told. There was no possible appeal.

A week before graduation, Wingate could barely disguise her bitter disappointment. "I made a start on work that very much needs to be done," she said. "The termination was a great disservice to the wildlife biology community, to the supporters of IFAW and to the animals. If I don't end up doing it, I hope someone else can."

Then she brightened. "I intend to continue this work. I suspect, though, that it will have to be in another country."

She also intends to build an interdisciplinary bridge — between veterinary medicine and wildlife biology — within herself by earning a Ph.D. in that field. But first she plans a year or two of veterinary practice and has accepted a position in a San Francisco-area clinic. "I need to get a solid handle on my skills," she acknowledged. "As the saying goes, 'If you don't use it, you lose it.'"

"Then I'll get back to the project," Wingate vowed. The doctor who worked among elephants noted that her first job "will be in a small-animal practice. But maybe I'll get to see some exotics on the side."

Honors thesis sent this senior back to high school

By Jill Goetz

Senior Joshua Spitzer spent much of this past winter working with other students, but not always in a Cornell building or even on the Cornell campus.

For his honors thesis, Spitzer, a senior in the university's College Scholars program, created and taught a writing and outdoor education course to 10 high school students at Ithaca's Alternative Community School.

The weekly course, "Authors, Essays and the Outdoors," involved intensive essay writing and field trips to local nature preserves, including the Cornell Plantations.

Through a series of assignments and exercises, Spitzer sought to highlight for students the relationship between how a writer approaches crafting an essay, regardless of the topic, and how a nature lover approaches the natural environment. He also tried to show how the students' interactions in the field

'The course has been my own finest opportunity to explore this intellectual and terrestrial world we inhabit.'

— Joshua Spitzer

resembled those in the classroom.

"I see the way that people access natural places as very similar to the way they approach the composition process," he said. "I wanted to find a series of lessons that would relate the experiences of sitting in front of a computer to being in the forest."

"Authors use many of the same skills that outdoors people use to survive in and enjoy the back country," he added. "Both must be confident, resourceful, daring and playful."

Likewise, "In the field, each student attends to the whole group's comfort, safety and instruction, while in the classroom, each student practices peer-review to develop fellow students' writing," he said.

Passions for writing and nature have long intersected for Spitzer, whose résumé lists writing, cycling, backpacking and cross-country skiing as pastimes. He has been a coxswain on the Cornell crew team, an instructor for Cornell University Outdoor Education, a member of the board of directors of New York State Recreational Resources and a seasonal manager at Cayuga Mountain Bike Shop — all while making Dean's List and Phi Beta Kappa.

But for Spitzer, teaching at the Alternative Community School has been the highlight of his Cornell career.

"The course has been my own finest opportunity to explore this intellectual and terrestrial world we inhabit," Spitzer said.



Robert Barker/University Photography

Joshua Spitzer '96 poses at the Stevens Suspension Bridge in the Cornell Plantations. The senior created and taught a writing and outdoor education course for local high school students.

GRADUATION 1996 STUDENT PROFILES

Engineering physics senior will use his opportunity to serve his vision

By Larry Bernard

Alan J. Renaud has news for Cornellians: The weather's not so bad in Ithaca. It's not even that cold.

Winnipeg, Canada. Now *that's* cold. "Why, I go swimming in Ithaca weather," Renaud says with a wave of the hand. "Just kidding."

While the Cornell senior in applied and engineering physics may return to Canada after this summer to spend time with his parents, he won't be there long. After all, a doctorate beckons.

Renaud, 23, knows about adjusting to weather. Born in the Seychelles, a tiny African island nation in the middle of the Indian Ocean, his family moved to London when he was 2, Calgary, Canada, at 9 and finally to Winnipeg when he was 15.

But despite the weather, when he got accepted to Cornell five years ago, "It was one of the happiest days of my life," he said. Not only would he be the first in his immediate family to attend college, he was to attend one of the world's greatest universities and the one where his role model taught and preached the gospel of science:

Like many of today's students, Renaud was "turned on" to science through the influence of another Cornellian — astronomer Carl Sagan, director of the Laboratory for Planetary Studies, whose television series *Cosmos* was shown around the world to the largest audience in public broadcasting's history.

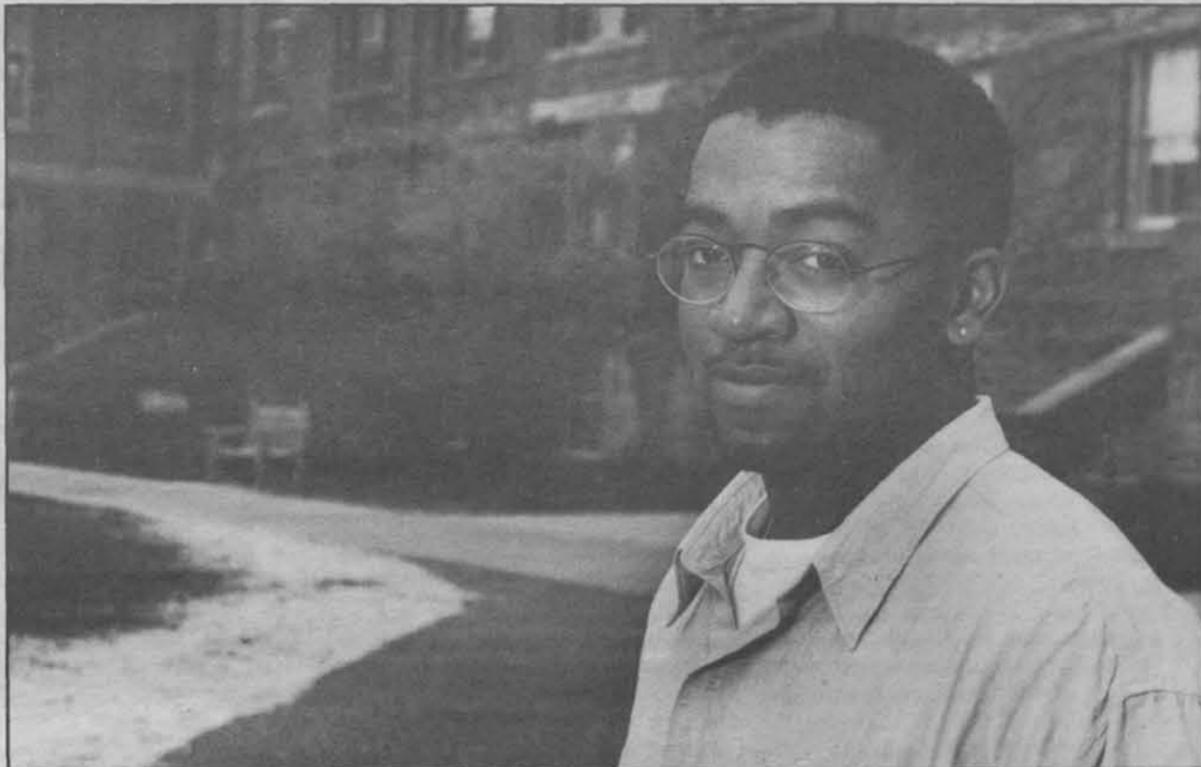
"I always liked science as a kid," Renaud said. "But after seeing *Cosmos*, science became positively delicious. In the show, Carl Sagan used to mention a laboratory he had at Cornell, and I can remember thinking, 'what a university that must be!'"

On the Dean's List every semester with a 3.8 cumulative average and 3.9 in his major, Renaud studied engineering physics with eager anticipation. He enjoys being a teaching assistant — he will TA an engineering co-op course this summer session and has been a TA for the introductory lasers course — and is doing research in quantum mechanics with Alfred Phillips Jr., associate professor of electrical engineering.

Renaud has been a tutor at Cornell's Learning Skills Center and a facilitator in the Academic Excellence Workshop for introductory physics. He is a member of Tau Beta Pi, the engineering honorary society. He also is a Killam Canadian Fund scholar and a member of the Golden Key National Honor society.

"Alan fits my definition of an intellectual: He not only focuses on his field but also examines, without being required to do so, ideas and information outside that field, relating them to each other," said Penny J. Beebe, senior lecturer in the Engineering Communications Program, who taught Renaud. "His mind is alive, and he is interested."

What really set the stage for Renaud's Cornell years was getting accepted, after high school, into Shad Valley, Canada's premier and exclusive summer program in science, technology and entrepreneurship. There, he met another student who had applied to Cornell, and what previously had been fantasy for Renaud suddenly became in the



Alan Renaud, a senior in applied and engineering physics who will be graduating Sunday, poses in front of Rockefeller Hall.

realm of possibility. "Shad Valley inspired and motivated me, and made me reach for the stars," he said.

But first, a return to one's roots. The Seychelles is an island nation smaller than Tompkins County. Renaud has a large extended family there, 20 uncles and aunts and so many cousins he cannot keep count; he has not even met them all. The Seychelles, he said, is one of the most beautiful and exotic places in the world, with clean, gorgeous beaches, palm trees, tropical weather and beautiful people, with several unique species of plants and animals. For example, the nation boasts the world's largest tortoises as well as the world's largest nuts (the *Coco-de-Mer*).

Renaud visited in 1991, taking a year off after high school and spending about half of it there, encouraged by his parents: His father, Sonny, a hospital accountant, and mother, Wils, a former teacher now employed in hospital records.

"It was quite a shock meeting my extended family for what was really the first time," he said. "What a surprise it was to meet people who not only looked like me but acted like me, talked like me, even laughed like me. There was a feeling of genetic familiarity."

At times confusing — natives speak Creole patois, French and English, and television shows may be in any one of the three languages — his visit was a humbling experience, too, as Renaud admits to having been somewhat conceited:

"I had felt like I was special coming from Canada, with all its good schools and everything, and I had thought the

Seychelles was backward. But really, I was the backward one. Having a good education did not make me a better or a more clever person. I met my betters there," he said.

Now, however, he hopes to give something back. "Many of them are as equally capable as I. And they are hungry for opportunity," Renaud said. Too small to become a manufacturing center, "the Seychelles is going to have to invest in our one great resource: our people," Renaud said. He speaks of perhaps making an "island of consultants," a reservoir of experts who even could export knowledge around the world.

"If the Internet lives up to its promise, then the world's knowledge will soon be at our fingertips," he said. "Like some families have a tradition of becoming doctors, perhaps we could begin a tradition of service."

Such a plan cannot be made alone. So Renaud would look to his brothers — Alfred, a computer science major at Yale, and Alex, an electrical engineering major at the University of Manitoba — to help kick start the information revolution in the Seychelles, and perhaps spread it throughout Africa.

"You see," he explained with the fervor of idealism, "I represent the first generation from when most African countries received their independence. Our parents did not have these opportunities. There is so much to be done in the world. I want to make as much of a difference as I can."

"We need a new vision for the world. We have to blend ideas from different peoples, different cultures. And where there are obstacles, we will have to persist despite them."

Lecturer-choreographer takes final steps toward a theater arts degree

By Jill Goetz

Jim Self teaches dance in Cornell's Department of Theatre Arts. So why has he been taking courses in anthropology, essay writing and astronomy?

Because he is also a student, about to earn his bachelor's degree through Cornell's College Scholars program. And like many students enrolled in the program, he has carved out an imaginative and interdisciplinary curriculum.

Self has taught modern dance and choreography at Cornell's Center for Theatre Arts since 1989 (the year the center opened). Since enrolling as a Cornell student in 1991, he has managed to fulfill the requirements for an undergraduate degree by balancing a full teaching load with daytime, evening and summer classes.

He devoted this past year to an honors thesis titled "Chez Dada, Chez Moi (The House of Dada Self)."

"It is an autobiographical novel describing and illustrating how I came to inhabit the 'House of Dada,'" he said of the project. "The novel is a late 20th-century reflection of self-fractured Dada ideals. The work does not specifically address the literary and artistic movement of Dadaism, but instead



Jim Self, center, in black, in "Merce Cunningham and the Shrine of Dancing Iguana Consciousness or The Life in John's Cage with Ella and Louis," a performance he conceived and directed at the Center for Theatre Arts in March of 1995.

reflects upon its concepts and forms. I'm practicing Dada, not historicizing Dada." Self hopes to use the novel as material for future dance performances.

Not surprisingly, Self's life story is steeped

in the arts. The Alabama native first danced professionally with Shirley Mordine's Chicago Dance Troupe and went on to choreograph several works before moving to New York City in the late 1970s. From there, he

toured the United States and Europe with the Merce Cunningham Dance Company.

His work has been commissioned by the Jacob's Pillow and American Dance Festivals, Dance Theater Workshop, Boston Ballet and Rome Opera — the latter for the 1984 edition of *The Civil Wars* by Philip Glass and Robert Wilson. He is the recipient of several choreography fellowships from the National Endowment for the Arts, and in 1986 he was the subject of an Alabama Public Television special, "Jim Self Comes Home."

While developing his own dance technique, Self was teaching it to others at American and European institutions before coming to Cornell. But that teaching background did not prepare him for the role of student.

"It was strange being older than the other students," said Self, 42. "At first, I was very quiet; I didn't want to appear to be dominating class discussions. But some of my teachers were particularly open to my presence and encouraged me to bring my personal experiences to the classroom situation."

After receiving his degree on May 26, Self will return to teaching at Cornell. If he's lucky, he'll encounter other nontraditional students like the one he used to be.

Long jumper from Croatia leaps past many obstacles

By Michael Jason Lee

Anita Jakelic has come a long way – literally and figuratively.

Just over three years ago, Jakelic was trapped in a nightmare. A native of Zagreb, Croatia, her country was engulfed in a brutal war that had devastating effects on the entire nation. Destruction, bombings and death were commonplace, as citizens lived in constant fear of what the next day might bring.

With the assistance of her older brother, Davor, Jakelic was able to escape the horrors of her homeland. Davor, who already was attending Cornell and was a member of the varsity track team, convinced his sister to pursue her education in America.

"My country was in a war for two years," Jakelic said. "I just applied to Cornell because I wanted to escape from my country."

Adjusting to the new environment proved difficult for Jakelic, in part because of her rudimentary understanding of English and the unfamiliar surroundings.

"I didn't know anything about Cornell, how good of a school it was or even what I was going to find here," the junior economics major recalled. "I just kind of figured that I had to be here for four years."

Despite her misgivings, Jakelic quickly carved herself a niche on the Cornell women's track team. In her first year on the squad, she shattered both the indoor and outdoor freshman record for the triple jump.

Jakelic worked closely with assistant track coach Rich Bowman to improve her jumping technique. Ironically, Jakelic's unique background led her to play the roles of student and teacher.

"The coaches gets more educated and learn more by working with a foreign athlete than they do with athletes in the states that are doing the same things to get better," Bowman said. "Anita has educated me in a lot of ways and made me a better coach by showing me some things

sports profile

they do over in Europe."

Jakelic's performance improved markedly in her sophomore season, as her diligent training reaped a record-breaking year.

During the indoor season, she placed first at the Heptagonal championships in the triple jump and finished third at the Eastern College Athletic Conference with an NCAA qualifying and school record leap of 41-1 3/4. Outdoors, she established a school record in the triple jump by leaping 40-2 3/4 at the Irvine Invitational and won the long jump at the Heps with a personal best of 18-4 1/2.

Strategic training adjustments were implemented before her junior year that would enable Jakelic to "peak" at crucial season-ending meets.

"Last year I would start working really hard in the beginning of the year in November and December, and by the time January came I slowed down," Jakelic said, noting that she peaked earlier in the season than she had hoped to. "This year, we did it the other way around. We worked a little bit less at the beginning and then started building in February and March and then slowed down in April."

Unfortunately, the new training method did not lead to the desired results, as Jakelic struggled through her junior season and was unable to sustain her success. She garnered her lone first-place finishes in the triple jump and long jump at the Sea Ray Relays (April 13) and the triple jump against Penn on April 20.

Despite her performance on the track, Bowman recognizes that Jakelic has excelled in other equally important endeavors.

"It's always tough when a foreign athlete comes to a new country and adjusts, and Anita has done that well," said the 16-year track mentor. "She has had a lot of tough things that went on in her back-



Photo courtesy of Sports Communications

Anita Jakelic takes off in her specialty – the triple jump – during a meet in her sophomore year.

ground with her country being torn apart with strife. She has been able to find a safe haven over here and do what she needs to do to grow and prosper.

"She has shown everyone that no matter how hard it is, you can always find a way to succeed," he said.

Jakelic values the freedoms offered to her in America, freedoms not available to students in her homeland.

"Cornell has so much opportunity. You can do whatever you want here, like selecting the subjects you want to study and choosing your own major," she said. "There's nobody to say you

have to do this or that, or if you don't feel well, no one's going to make you practice anyway. In my country, you can't skip practice, you have to do whatever they want you to do."

The improved conditions in her homeland, coupled with a successful transition to America, have led Jakelic to re-evaluate her feelings for Cornell.

"I realize that this is the place I want to be. I no longer feel I am here because I have to be," she said. "I am really enjoying myself and realize how much I missed my freshman year."

Clearly, Jakelic has come a long way.

Arecibo *continued from page 1*

The upgrade gives the Arecibo telescope much better sensitivity that it could be used to listen in to a cellular telephone call on Venus; and the radar could detect a steel golf ball at the distance of the moon. The new system increases the telescope's sensitivity by a factor of about 20 for radar studies of the solar system – comets, planets, moons and asteroids. Studies of the radio waves from distant galaxies, pulsars, quasars and other objects can be made 10 times faster with the new focusing system, and the much greater frequency coverage (300 MHz to 10,000 MHz) will open up new studies of molecules in star-forming regions of our own galaxy.

A spherical reflector such as the Arecibo dish does not focus radio waves to a point as does a parabolic satellite antenna, but the symmetry properties of a sphere mean that it is possible to "steer" the telescope to look in different directions by moving the focusing system rather than the entire 1,000-foot reflector. The original focusing system consisted of long, linear wave guide elements (the villain in *Goldeneye* fell from the bottom of one of these) which have many disadvantages; a different one is needed for each frequency, and they are very difficult to build, virtually impossible at frequencies above about 3,000 MHz.

The new system, called a Gregorian system, does it with mirrors, one about 80 feet in diameter, the other about 28 feet across. The mirrors are enclosed in the dome along with the new radar transmitter and microwave receivers. The whole structure is attached to trolleys moving on the 300-foot-long curved feed arm suspended above the dish.

Thus, the new Arecibo Observatory holds promise for decades of new discoveries, as it opens up new areas of research. Here is an example of some of the science that can be investigated:

- Birth of stars. New stars form out of cold clouds of dust and gas, which emit no visible radiation. But the molecular material in these clouds emit radiation at radio wave-

Observatory has long history of achievement

Arecibo facts

- Arecibo Observatory was built in 1963 by the U.S. Air Force under the initiative of Professor William Gordon and his colleagues at Cornell. It was primarily intended for radar studies of the Earth's ionosphere, but it was realized that the telescope would be a very significant new instrument for the then relatively new fields of radio and radar astronomy. In addition to its astronomical observations, it is still used for atmospheric and ionospheric studies. It has been managed by Cornell since its construction, first for the Air Force and, after 1970, for the National Science Foundation.

- With a fixed spherical reflector dish and a steerable feed system, the observatory was upgraded in the 1970s shortly after Cornell began operating it for the NSF. An improved surface and high-power solar system radar were added. This upgrade was funded by the NSF, with NASA contributing the funds for the radar transmitter.

- The reflector dish is 1,000 feet in diameter (305 meters), as big as 26 football fields. Its surface is made of 38,800 reflective aluminum panels. The ground

screen is 50 feet high surrounding the perimeter of the primary antenna, the reflector dish. It has an area of about 16,000 square meters, the size of five football fields. The screen reduces radio noise emitted by the ground that gets into the receiver systems.

Arecibo accomplishments

- The first planets outside the solar system were discovered around a pulsar.

- One of its first accomplishments: Establishing the rotation rate of Mercury, which turned out to be 59 days rather than the previously suspected 88 days (1965).

- The first pulsar in a binary system was discovered, leading to important confirmation of Einstein's theory of general relativity and a Nobel Prize for Russell Hulse and Joseph Taylor of Princeton University.

- Investigation of ice in craters at the polar regions of the planet Mercury with the radar system.

- Provided much of our pre-Magellan mission knowledge of the surface of Venus via 1.5 km (1 mile) resolution imagery of the surface through the planet's cloud cover using the radar system.

lengths. "The high sensitivity and broad frequency coverage of the upgraded Arecibo Observatory will allow detection and study of a range of very heavy molecules in these coldest regions of the galaxy," Goldsmith said. Thus, scientists will have a new tool to study the chemical and physical conditions in the regions where new stars and planets around them form.

- Extra-galactic studies. Astronomers studying the large-scale structure of the universe will have a much improved ability to measure velocities and masses of galaxies, which

in turn can yield clues to the distribution of "missing matter" in the universe.

- Comets, like Comet Hale-Bopp, which will be visible this fall and Comet Hyakutake, which was visible from Earth in March, and near-Earth asteroids can be studied in far greater detail with the upgraded radar system at Arecibo.

- Pulsars can be examined more closely, and more of them become accessible, with the increased sensitivity. The first planets outside our solar system were discovered around a pulsar using the Arecibo Observatory.

CORNELL RESEARCH

Embryo transfer procedure offers hope for endangered species

By Roger Segelken

Cornell animal scientists may have a way to help rebuild populations of endangered mammalian species, now that they have succeeded in the first live births by non-surgical embryo collection and transfer in domestic ferrets.

Their new procedure with specially designed, miniature instruments is expected to offer a less invasive way to harvest and transfer embryos. Surgical procedures pose health risks to the animal and may compromise its ability to reproduce naturally — particularly important considerations when working with endangered species.

Two healthy domestic ferrets (*Mustela putorius furo*) were born April 15 in an animal science laboratory at the College of Agriculture and Life Sciences, 49 days after 12 seven-day-old embryos were non-surgically collected and transferred to a surrogate mother of the same species. The scientists plan to further refine the technique with domesticated ferrets, which are plentiful as pets, and hope to apply the technique to black-footed ferrets (*Mustela nigripes*), one of the rarest mammals in North America.

"We believe this is the first non-surgical embryo collection and transfer resulting in live young in small- to medium-sized mammals," said Robert H. Foote, the Jacob Gould Schurman Professor of Animal Science and Physiology Emeritus who, with Cornell colleague Xiangzhong Yang, pioneered many of the cloning procedures used today in cattle. Embryo transfer is now an everyday occurrence in cattle, but it is still in its infancy — so to speak — in exotic animals.

Collecting and transferring embryos non-surgically has been one of the stumbling blocks, Foote noted. The non-surgical procedure was developed in ferrets and rabbits, as a model for eventual application to other small mammals, including endangered species.

Until now, surgical procedures required entering through an animal's abdomen to flush embryos from — or transfer them to — the oviduct or uterus. Non-surgical embryo collection and transfer has been tried experimentally in larger wild animals in zoos, but the ferret was a greater challenge because its reproductive anatomy is on a much smaller scale.

"The ferret's cervix is not much bigger than a pinhead, and it is sometimes covered by tissue, so finding the entrance to the uterus is not easy," said Jeffrey D. Kidder, the zoology doctoral student who



Adriana Rovers/University Photography
Graduate student Jeffrey Kidder displays two baby ferrets — born as the result of a new, non-surgical embryo-transfer procedure — and their surrogate mother.

developed and performed the non-surgical embryo collection and transfer. "I had help from cardiologists and urologists in developing the procedure, but even their instruments were too large."

The ferret embryos are harvested from the donor animal with an array of custom-built instruments, including a 0.86-millimeter catheter. While Kidder watches a video monitor connected to a fiber-optic endoscope on loan from Olympus Corp., a fluid medium is injected into the donor

ferret's uterus. The fluid flushes embryos out through the catheter and into collection dishes. Harvested embryos are selected by microscopic examination for viability and held in a nutrient solution.

Embryo transfer in ferrets reverses the process. The embryos are transferred, using catheters of similar size, to a surrogate mother who has been hormonally treated with human chorionic gonadotropin so that her uterus is in synchrony with that of the embryo donor.

Marshall Farms Inc. of North Rose, N.Y., donated domestic ferrets and provided technical assistance in ferret husbandry. Michael Simkin of the Department of Animal Science and Paul Roberts in the College of Veterinary Medicine contributed technical expertise in various phases of the experiments. The experiments were supported by the New York Cooperative Fish and Wildlife Research Unit and the Department of Animal Science at Cornell. Additional equipment and support was provided by the cardiology and urology departments of the Cornell University Medical College in New York City.

Kidder spent two years developing the transfer procedure with rabbits before attempting ferrets. The first live birth of rabbits from non-surgical embryo collection and transfer occurred April 25. Although the rabbit's reproductive tract is somewhat larger, its different shape presented other challenges and required the development of special instruments as well, he noted.

The zoologist expects to perform about 30 transfer procedures in domesticated ferrets before trying the technique with a species as endangered as the black-footed ferret. One question still to be answered is whether the domesticated species, which originally came from Europe, is closely enough related to serve as a surrogate mother for black-footed ferret embryos.

Taking reproductive science a step further, a single ferret embryo at the appropriate stage of early development could be cloned with techniques now being perfected by Yang and colleagues in the Cornell Embryo Bioengineering Program and at other laboratories. Using the rabbit as a model, the ferret embryo may be able to be separated into as many as 32 totipotent cells — each with the potential of growing into a genetically identical animal.

When cloning cattle, the nucleus of each separated embryo cell is put in a special "nurse egg" cell that already has its nucleus removed, Foote explained. Those reconstructed embryos are then activated, cultured and grown to a stage called the blastocyst, which are transferred to synchronized recipients. Although 32 clones from one embryo are theoretically possible, that number has not yet been achieved because of the difficulty of the multistep process, Foote said.

The cloning studies hold hope for even greater achievements, Foote said, referring to the possibility of culturing special cells in the blastocyst that will grow into embryos and produce millions of identical cells in cattle and other animal species.

Symposium will focus on encouraging international science education

By Larry Bernard

A symposium to help science educators find ways of building programs that will encourage science students to consider international experiences as fundamental to their education will be held at Cornell June 9-12.

The "Symposium on International Science and Engineering Education" will give educators and others the tools to generate international interest among U.S. science students, who often lack knowledge and understanding of how science is done in other cultures.

"Science today is an increasingly international activity," said Yervant Terzian, chairman of Cornell's astronomy department, director of the Pew Science Program and a symposium organizer. "Yet undergraduate science students are some of the least likely to travel overseas, to take advantage of 'study abroad' programs. They often perceive the time away from their schools as lost time. They fear they will be out of step with their peers, falling behind in the competitive research world."

The symposium talks, in Room G10, Biotechnology Building, are free and open to the public. However, registration for the three-day symposium, including all meals, is \$100. To obtain registration materials or for more information, contact Sue Chamberlain, Pew Science Program, Cornell University, telephone 255-2710, e-mail <chamberl@astrosun.tn.cornell.edu> or fax 255-1767.

"Scientists, not just world leaders, must understand other cultures if they wish to share ideas and values, transfer technology, establish personal relationships and help tomorrow's leaders in the quest for a peaceful and equitable global existence," Terzian said.

Sponsored by the New York State Pew Program in Undergraduate Science Education (a consortium of seven universities and colleges), the symposium features speakers from the United States, China, Japan, France, Latin America, Egypt, Kenya, the Netherlands, Greece and Great Britain.

The keynote address will be given by Frank H.T. Rhodes, Cornell president emeritus, at 9:15 a.m. on Monday, June 10, in Room G10 of the Biotechnology

Building. His talk will be on "Unity and Diversity" in science education in different cultures.

Speakers in the first part of the symposium will examine the goals of science education in their cultures, as well as how science students are recruited. The second part of the symposium will address questions of science and technology on a global level, while the third section will explore, by discipline, the needs, values and problems of science students participating in programs abroad. The conference will conclude with a discussion of future directions in international science education programs.

The Pew Program sponsors development of introductory undergraduate courses covering the entire range of scientific disciplines. It provides students with state-of-the-art research equipment, promotes collaborative research, faculty development and teacher training. New York members are Cornell, Barnard College, Colgate University, Hamilton College, Manhattan College, Saint Lawrence University and Union College.

Report shows growth in N.E. farmer co-ops

By Blaine P. Friedlander Jr.

Farmer-owned fruit and vegetable cooperatives that wholesale produce to restaurants, supermarkets and institutions could become a valuable marketing strategy to help sustain the agriculture industry in the Northeast, according to a recent Cornell report. Bucking a national trend of declining co-ops, fruit and vegetable cooperatives in the Northeast are growing in number.

"This came as quite a surprise to me," said Duncan Hilchey, agricultural development specialist in the Cornell Farming Alternatives Program, part of the university's Department of Rural Sociology. "Northeastern cooperatives are growing in number with very little public support. They seem to be increasing as a result of opportunities in the private sector which is fostering these changes. Cooperative Extension assistance may enhance that potential."

Hilchey cannot pinpoint exactly why grower cooperatives are increasing in the Northeast but are declining elsewhere. If funding becomes available, a new study could determine that. Certainly, the 10 percent to 12 percent growth in fruit and vegetable consumption over the past 10 years is a contributing factor.

Nationally, while the number of cooperatives has fallen 44 percent over the past seven years, fruit and vegetable cooperatives in the Northeast have increased by 56 percent, according to the U.S. Department of Agriculture's Rural Business and Cooperative Development Service.

"Participating in a cooperative often complements a grower's retail activities, such as selling at a roadside stand or a farmers' market," Hilchey said.

"If well-managed, cooperatives may offer a means of achieving what is beyond the reach of individual growers, such as entering new markets or adding value to produce," said Brian Henahan, senior extension associate with the Cornell Cooperative Enterprise Program. With 11, New York leads the Northeast in number of fruit and vegetable cooperatives that gross at least \$10 million annually.

"We believe small-scale fruit and vegetable cooperatives have the potential to be an important component of an overall sustainable agriculture strategy for the Northeast," Hilchey said. The study will attempt to grapple with challenges facing the growers, characteristics of successful or failing cooperatives, and how small-scale cooperatives could work together to increase all growers' opportunities.

Small-scale cooperatives — which gross less than \$10 million in sales annually — make up only 4 percent of the Northeast's \$2 billion in fruit and vegetable cooperative sales. Hilchey explained that large grower cooperatives, like Ocean Spray and National Grape (Welch's), account for most of the sales. But many small-scale fruit and vegetable cooperatives occupy niches in the regional marketplace that have not been filled by least-cost, mass-market producers and distributors, he said.

"One possible development strategy could be the establishment of a Northeast Growers Co-op Federation," Hilchey said. The Horticulture Producers Federated Association accomplished this successfully in the Southeast. That formal association provides insurance, some marketing assistance, educational services, consulting and political action.

"An organization which supports existing grower cooperatives and promotes the establishment of new cooperatives in the region could help farmers capture a larger share of the growing fruit and vegetable market," Hilchey said.



Hilchey



Charles Harrington/University Photography

Doctoral student Leslie Allee, left, and Paula Davis, assistant professor of entomology, are using neutron radiography at the Ward Laboratory of Nuclear Engineering on campus to study corn rootworm, an insect pest. Below is the neutron beam-generated image of the internal workings of a toy handgun that was inside a lead box.

Neutron beam helps scientists see things X-rays cannot

By Larry Bernard

Like a physician examining X-rays, Leslie Allee lends an expert eye to the film hanging on the light screen.

No broken bones here. Allee, a Cornell doctoral student in entomology, is looking at film that shows a thin white line branching off in different directions. Around it are three or four tiny white marks, maybe 1/4-inch long — the objects of her attention. These are living corn rootworms in soil, caught in the act of searching for the plant root.

"Here you can see where they were when we started. In this picture you can see where they were 24 hours later. The dark lines show the path of the rootworm," she says, pointing to the film.

No ordinary pictures, these; Allee is making use of a Cornell resource to study, along with Paula Davis, assistant professor of entomology, the behavior of this major corn pest in the hope of developing a natural way to control it.

By using the 500-kilowatt nuclear reactor on campus, the entomologists can get sharp pictures on film of their corn roots and the rootworms in soil around it. The technique is called neutron radiography, and professors from art historians and agronomists to zoologists can use it to get detailed pictures that X-rays cannot produce. It is the first time neutron radiography has been used to study insects.

"X-rays pass through the rootworms without attenuation. Neutrons, however, are attenuated by the hydrogen in the rootworms," Davis said. "With a neutron beam, we can also see the corn roots and see the behavior of the insects as they are growing. And it's all totally non-invasive."

Here is how it works: The TRIGA Mark II nuclear reactor at Ward Laboratory on the Engineering Quad produces a beam of neutrons that is focused to a plate holding a sample. Behind the sample is film. The neutrons pass through the film (unlike X-rays, without activating the emulsion), and land on a conversion screen (made of the rare-earth metal gadolinium) that absorbs them. The metal screen emits an electron for every neutron it absorbs, and that activates the emulsion and produces the photographic image on film.

The result looks like an X-ray, but it can reveal things X-rays cannot. An example: a toy plastic gun sealed in a 1-inch-thick lead box. The neutron radiograph shows details inside the gun, even its spring mechanism, but X-rays could not even penetrate the lead box.

"Neutron radiography is a new way of looking at things and has proved to be a very useful nondestructive evaluation tool," said Howard Aderhold, reactor supervisor who designed and built Cornell's neutron radi-



'Neutron radiography is a new way of looking at things and has proved to be a very useful nondestructive evaluation tool. We think faculty from many different disciplines could benefit from this technology.'

—Howard Aderhold, reactor supervisor

ography facility a decade ago. "We think faculty from many different disciplines could benefit from this technology."

Indeed, its utility already has been shown by Cornell faculty in a variety of areas. W. S. Taft, professor of art, has used neutron-induced autoradiography radiography to peer beneath layers of pigments on a painting to see what lies beneath. As an experiment, he took a classical painting of a woman, painted an abstract modern painting atop that, and then painted a fabric drape over that.

When subjected to the neutron beam, each layer became visible. The goal: an understanding of the most common modern pigments so a more informed analysis of modern paintings could result. Taft used such case studies in an undergraduate course, "Art, Isotopes and Analysis."

Now he uses neutron-induced autoradiography as a form of art itself. "It has always been used for analysis, but I was really interested in the images it produced," Taft said. So he started making radiographs of his paintings, which have been exhibited in California, Washington, D.C. and Ithaca.

"The painting is just a means of producing the radiographs; the radiographs are the final work," he said. "X-rays only make visible a very few number of elements. Using neutrons, we can see a broader range of elements. It's extremely useful." Now he is embarking on a new project, in collaboration with the Getty Conservation Institute in

California, to try to resurrect an image from an old, faded photograph. The idea is to see the silver that's not visible to the human eye.

David Bouldin, professor of soil, crops and atmospheric sciences, and Michael Cahn, graduate student, showed water distribution, root growth rates and root distribution in soil using the technology. Richard Zobel, professor of plant breeding, and Victor Bushamuka, graduate student, later used neutron radiography to examine root growth and responses of tolerant plants to toxic aluminum and compacted soils.

The neutron radiography facility now has the capability for real-time observing. A video camera inside the high-flux beam configuration can show what happens to a sample as it is happening. This beam is 40 times more intense than the beam used in high-resolution film radiography, such as that used to view corn rootworms. K. Bingham Cady, professor of nuclear engineering, is using it in collaboration with Jean-Yves Parlange, professor of agricultural and biological engineering, and Tammo Steenhuis, associate professor of agricultural and biological engineering, to study oil and water penetration in sand. Such studies will be useful for determining optimum cleanup methods for oil spills.

"You can see the water and oil diffusing into the sand," Cady said. Neither X-rays nor neutrons can readily detect the difference between water and oil, he explained. With neutron radiography, however, there is the potential for distinguishing between the oil and water by modifying the water phase in one of two ways: add gadolinium nitrate to make the water more opaque to neutrons, or replace light water with heavy water to make the "water" more transparent to neutrons.

Cady also is proposing to use neutron radiography to measure vapor fractions in two-phase (boiling) flow. High vapor fractions are the precursor to sudden failure of heated surfaces in nuclear reactors. The vapor fraction measurements are in support of a two-phase flow model important in understanding the potential for severe accidents in nuclear reactors.

David D. Clark, professor of nuclear science and engineering and director of Ward Laboratory, who teaches the freshman introductory course "Fission, Fusion and Radiation," said that faculty from a variety of disciplines are welcome at the facility. "The reactor facility has broad usefulness and can be used across the whole campus," he said. "Even if someone is unsure, we can help determine if they could benefit from these tools."

Research groups with interest in using the facility should contact Howard Aderhold, (607) 255-3481, or hca1@cornell.edu.

Tourism expert: Traditional summer vacations have seen their day

By Darryl Geddes

The traditional summer vacation — that getaway with mom, dad and the kids setting out in the car for some resort in the mountains or at water's edge — is becoming a victim of societal changes and consumer demands.

"The days of saving up and making elaborate preparations for a summer escape from the suburbs are waning," says Malcolm A. Noden, a tourism policy expert, travel consultant and senior lecturer at Cornell's School of Hotel Administration. "The traditional summer vacation, as many of us know it, is becoming part of America's past."



Noden

Noden says the break-up of the American family is one of several reasons summer vacations aren't what they once were. "These were always times families could count on where they would all be together, but that's changed," he said. "Today, with parents having joint custody of their children with many differing custody agreements, summer vacations can be too emotional and, frankly, too much trouble to coordinate."

The reworking of the traditional summer vacation does not mean Americans are not vacationing.

"In fact, we do it more frequently now, but for shorter stays," Noden said. "Consumers, in increasing numbers, have a greater desire and willingness to go further afield for shorter periods of time."

The low costs and greater availability of air travel have opened a diverse menu of destinations for the traveler at the expense of some of America's most traditional resorts, he

noted. "Our view of the world has changed. Twenty-five years ago, a trip to the Poconos was hot stuff. It was a day's drive, 100 miles. Today we drive 100 miles to the airport."

The change in vacation destinations also reflects the desire to experience it all — a sort of race against time to dot one's travel résumé or passport with exotic hot spots that hopefully neither one's neighbor or co-worker have yet found.

"It's the 'been there, done that' attitude that propels us to jump on a plane and fly to Belize to scuba dive in the coral reefs," Noden said. "Years ago, our more traditional behavior would have been to go to Miami and sit on the beach."

But despite these vacationers, who are breaking with tradition when it comes to the summer vacation, there still are people who set out in their car with road map in hand in pursuit of rest and relaxation.

Tumor-fighting fish are focus of vet studies

By Roger Segelken

Viral gene studies at the College of Veterinary Medicine aim to learn how some fish fight skin cancer and how retroviruses function in the development and regression of tumors.

Supported by a three-year, \$270,000 grant from the American Cancer Society (ACS), James W. Casey, associate professor of microbiology and immunology, is leading an investigation of a complex retrovirus called walleye dermal sarcoma virus (WDSV) and the tumors it causes on the skin of the fish.

Casey, along with microbiology and immunology professors Paul R. Bowser and Donald Holzschu and Volker M. Vogt of the Section of Biochemistry, Cell and Molecular Biology, are investigating the mechanisms by which certain fish tumors grow and regress on a seasonal basis.

"The kind of tumor regression we see in walleyes is unique to poikilotherms — or cold-blooded animals — and WDSV is of particular interest because an understanding of this process may help explain how other cancer-related retroviruses and the immune systems of their hosts interact," said Casey, a specialist in molecular virology.

The ACS study at Cornell will focus on viral genes and infectious particles during tumor induction and regression in cell cultures as well as in fingerling walleyes and older fish with naturally-induced tumors. By the time the fish virus study is completed in 1998, the research team of virologists and fish pathologists hope to know more about how processes such as superinfection, viremia and immune responses are related to cancer in other animals, including humans.

Excellent networking



Adriana Rovers/University Photography

On behalf of the university, Cornell President Hunter Rawlings accepts the 1995 Cause Award for Excellence in Campus Networking from Jane Ryland, Cause president, on May 13 in the Statler Hall Ballroom. The award — recognizing exemplary campuswide network planning, management and accessibility, as well as effective use of the campuswide network to enhance teaching, learning, research, administration and community service — was announced in November of 1995. A statement accompanying the award reads, in part: "... Cornell has evolved into an Information Age institution, where 95 percent of the faculty, almost 100 percent of the students, and 90 percent of the staff are connected to and use the campus network." Cornell was chosen from among 17 colleges and universities that submitted applications for the 1995 award from Cause, the association for managing and using information resources in higher education.

Reminder: CUinfo will be discontinuing use of Gopher on June 16

As of June 16, CUinfo, the campus-wide electronic service that provides information about Cornell events and activities, will no longer be available through Gopher. It will be available only through the World Wide Web and telnet, a text-based service with easy-to-navigate menus and links using the same files as the Web service.

You can access CUinfo via the web from the Bear Access Launch Pad using the button "CUinfo via Web," or reach it directly at <http://www.cornell.edu/>. If you do not currently use the Web to reach CUinfo, CUinfo administration recommends that you begin doing so now. Cornell Information Technologies (CIT) provides Netscape, software for navigating the web, as part of Bear Access for Macintosh and Windows.

There will be a hidden button on the Bear Access Launch Pad called "CUINFO/WWW via Telnet" as of June 16. In order

@cornell.edu

for that button to show up on your Launch Pad, you must choose Select Mode from the Buttons pull-down menu. Click on the box to the left of "CUINFO/WWW via Telnet." Return to the Buttons menu and choose Normal Mode. The "CUINFO/WWW via Telnet" button will then show up on the Launch Pad.

For more information on how to use telnet or about how to access CUinfo, visit the following Web site: http://www.cornell.edu/Computer/CUinfo_access.html.

For other questions or comments, contact CUinfo administration at cuinfo-admin@cornell.edu.

Bear Access for DOS phased out

Due to the computing industry's lack of active development of DOS software and to Cornell's growing need for more Windows support, CIT plans to stop distributing — and eventually to stop supporting — Bear Access for DOS. The decision to phase out DOS Bear Access was made in collaboration with computing support providers in departments across Cornell.

CIT no longer distributes DOS Bear Access. However, CIT will continue to provide consulting support for DOS Bear Access until July 1, 1997. For information, contact the CIT Service HelpDesk, 255-8990, helpdesk@cornell.edu.

Noyes lab moves temporarily

Due to major renovations in the Noyes Community Center this summer, the CIT lab located in 109 Noyes has moved to G23 McFaddin Hall. The move took place on May 3, and the lab re-opened at noon

on May 4. The space in McFaddin is smaller than that in Noyes, so CIT was not able to move all of the equipment formerly located in Noyes. There are currently 12 Macintoshes and seven IBMs with dot matrix printers, plus a small staff/storage area in McFaddin. The McFaddin lab is closed until June 24, the start of the summer six-week session. As of June 24, the lab hours will be 8 a.m. to 11 p.m., seven days a week. CIT will provide student staffing every day from 4 p.m. to 11 p.m. The telephone number in McFaddin is the same as it was in Noyes (253-0997).

The Noyes renovations are scheduled to be completed in early August, and at that time the lab will move back to Noyes. Details about this move will be forthcoming.

This column is compiled and edited by Daisy Dailey of CIT. Send questions or comments to citnews@cornell.edu.

Students and faculty honored for their achievements

This list of faculty and student awards is only a sampling of the honors presented this year. Some awards not listed here have yet to be chosen or have already been announced in the Chronicle. Congratulations to all!

College of Agriculture and Life Sciences

The Senior Service Award, sponsored by the ALS Alumni Association, went to **Karin Klapper** and **A'ndrea Van Schoick**.

Molly Schiltgen received the Paul Schreurs Memorial Award to recognize excellence in undergraduate research, sponsored by the college's honor society, Ho-Nun-De-Kah.

The Academic Excellence Award recognizes the top scholars in each of the 17 majors in the college. They were awarded as follows: agricultural and biological engineering: **Norbert Lou**; agricultural, resource and managerial economics: **Todd Builione**; animal science: **Stephanie Konsker**; biological sciences: **Deborah deSa**; biometry and statistics: **Matthew Kumpf**; communication: **Lyra Colfer**; education: **Laura Bogardus**; entomology: **Mark Milleman**; environmental systems technology: **Kevin Drees**; food science: **Yinqing Ma**; general studies: **Adam Landman**; landscape architecture: **Benjamin Young**; natural resources: **Tracy Triplett**; nutrition, food and agriculture: **Ginnie Anderson**; plant sciences: **Jason Griffin**; rural sociology: **Rachel Goodman**; soil, crop and atmospheric sciences: **Eric Brewer**.

The Outstanding Student Employee Award went to **Dawn Chavez** and **Tammie Cross**, and the Perseverance Award went to **Heather Rauf** and **Linda Riggs**.

The Professor of Merit award, voted on by the senior class, was awarded to **Lois Willett**, professor of agricultural, resource and managerial economics.

The Distinguished Adviser Award, also selected by the senior class, has been renamed the Donald C. Burgett Distinguished Adviser Award in recognition of Burgett and his 28 years of service to the college. This year's recipient was **Dale A. Grossman**, professor of agricultural, resource and managerial economics.

The Young Faculty Teaching Excellence Award, given by the college to a faculty member with less than 10 years of teaching at Cornell who demonstrates excellence in undergraduate teaching, went to **Margaret M. Kyle**, assistant professor of plant breeding.

The Innovative Teaching Award, for developing new approaches to instruction in undergraduate teaching, went to **David A. Levitsky**, professor of nutritional sciences.

The NACTA Teaching Award of Merit, given by the National Association for College Teachers of Agriculture, went to **Timothy J. Fahey** of the Department of Natural Resources.

The Chancellor's Award for Excellence in Teaching, awarded by the State University of New York, went to **George J. Conneman**, professor of agricultural, resource and managerial economics, and **George W. Hudler**, professor of plant pathology.

The Chancellor's Award for Excellence in Professional Service, also awarded by SUNY, went to **Richard A. Church**, director of alumni affairs for the Ag College.

The Edgerton Career Teaching Award, for a faculty member who has provided outstanding teaching and advising throughout a long and continuous career in the college, went to **George J. Conneman**, professor of agricultural, resource and managerial economics.

Agricultural, Resource & Managerial Economics

Charmaine T. Ing and **Lori B. Marino** were chosen to receive \$1,000 each from the Cyril F. Crowe Fund, which recognizes academic performance of students specializing in applied mathematics and business management.

College of Architecture, Art and Planning

The Martin Dominguez Award for Distinguished Teaching, voted on by all students and faculty in the department, went to **Zevi Blum**, professor of art.

The AIA Student Medal and Certificate, for best undergraduate academic grade average, went to **Christopher Genter** (medal) and **Nicholas Larco** (certificate).

Francisco Acoba received the Alpha Rho Chi Medal, recognizing leadership, service and future promise.

Christopher Genter received the Clifton Beckwith Brown Memorial Medal, awarded to the senior attaining the highest cumulative average in architectural design.

The William Downing Prize, recognizing outstanding achievement in architectural design, went to **Monica Rodriguez**.

Stephen Chen received the Eschweiler Prize, given to a graduating architecture student who has enrolled in an architecture graduate program at Cornell.

Nicholas Larco won the New York Society of Architects Matthew W. Del Gaudio Award for leading the class in design, planning and construction.

The Michael Rapuano Memorial Award for distinction in design went to **Jutiki Gunter**.



University Photography

Among the honors given out at the April 24 Dean's Awards Convocation for the College of Agriculture and Life Sciences (ALS) was the ALS Alumni Association's 1996 Senior Service Award. The finalists, from left to right, were **Slade Ashley Cox**, **Cheryl Dollard**, **Karin Klapper**, **Robin Claire McLean** and **A'ndrea Van Schoick**. The award winners were **Klapper** and **Van Schoick**. Congratulating the students are **Daryl B. Lund**, left, the **Ronald P. Lynch** Dean of ALS, and **H. Dean Sutphin**, associate ALS dean and director of academic programs.

The Charles Goodwin Sands Memorial Medals went to **Christopher Genter**, silver medal for architecture; **Laura Nova**, bronze medal for art; and **Todd Eisenpresser**, **David Nam** and **Monica Rodriguez**, bronze medals for architecture.

The George How Summer Travel Award went to **Nsenga Bansfield**.

Catherine Tingey received the Faculty Medal of Art, based on academic record and studio work demonstrating promise of future achievement in the field of art.

Megan Faulkner won the Edith and Walter King Stone Memorial Prize, given to juniors exhibiting promise and accomplishment in the field of art.

The Department of City and Regional Planning Student Award for exemplary community service went to graduate students **John Thomas** and **Charles Jennings** and undergraduates **Emily Hart** and **Ryan Tan**.

Jennifer Tiffany won the American Institute of Certified Planners Student Award for outstanding achievement in the graduate study of planning.

Jennifer Swift received the John "Kip" Brady Award for Printmakers.

For academic achievement and contribution to the intellectual advancement of fellow students, the Thomas W. Mackesey Prize went to **Martha Armstrong**.

City and regional planning student **Xavier Morales** won \$1,000 from the Edna Bailey Sussman Fund in support of a summer internship project.

The David Bean Scholarship for studying in Europe went to **Eniko Hangay**, **Tasha Caugh**, **Mathew Abruzzo** and **Rachel Farber-Kaiser**.

The Urban and Regional Studies Academic Achievement Award went to **Amy Greenhouse**.

Winners of the Edwin A. Seipp Memorial Prize, based on a special third-year design competition, were **Ali Jeevanjee**, **Jose Gutierrez** and **Christopher Williams**.

Robert James Eidlitz Fellowships to supplement professional training in the field of architecture went to **Reja Bakhshandegi**, **Kyra Chomak**, **Mark Lawton**, **Sue Mee Lee**, **Sean Selby**, **Stefee Sloane-Oouchbane** and **Pamela Unwin-Barkley**.

The Peter B. Andrews Memorial Thesis Prize for the best thesis presentation for the degree of master of regional planning went to **Elisabeth Uphoff**.

Athletics

Each Ivy League institution nominates five men and five women among its eligible student-athletes who were starters or key reserves on any officially recognized varsity team with a 3.0 or better cumulative grade point average. The recipients are announced by the Ivy League Office.

All-Ivy Academic Honors for fall 1995 went to **Michelle Lauerma**, women's soccer; **Olga Itskhoki**, women's tennis; **Thomas Strobel**, lightweight football; and **Ron Mateo**, football.

Winter 1995-96: **Kristin Davis**, women's track; **Mary LaMachia**, women's basketball; **Liz Thomson**, women's swimming; and **Brandt Schuckman**, men's basketball.

Spring 1996: **Craig Palmer**, men's heavyweight crew; **Olga Itskhoki**, women's tennis; and **Amy Carpenter**, women's lacrosse.

Chemistry Department

Stephen Schvaneveldt received a Clark Teaching Award.

The following undergraduate prizes have been awarded:

Leo and Berdie Mandelkern Prize to **Phillip Geissler**. George C. Caldwell Prizes to **Jima Jenab** and **Michael Eichberg**. American Institute of Chemists Medal to **Steven Ewer**. Merck Index Awards went to **Susan Mao** and **Andrew Yeh**. Harold Adlard Lovenberg Prize to **Emily Reines**. ACS Analytical Prize to **Cherie Purring**. A.W. Laubengayer Prizes to **Betsy Ostrov**, **Andrew Blix** and **Richard Larson**.

Civil and Environmental Engineering

Professor **Richard N. White** was elected the 1996 Chi Epsilon Professor of the Year by the students in civil and environmental engineering.

Lee Fishman has received a \$2,000 award from the American Concrete Institute Concrete Research and Education Foundation for "high potential for making the most significant contributions to the concrete profession."

Students who won \$1,000 first prizes in the National Student Paper Competition for the 1996 International Bridge Conference were **Barbara J. Jaeger** for "Evaluation of a Post-Tensioned Bridge Using the Impact-Echo Method" and **John Ochsendorf** for "An Engineering Study of the Last Inca Suspension Bridge."

Patrick McCafferty won the two-year Ove Arup & Partners Engineering Fellowship for civil engineering practice in London.

Khalid Mosalam won the 1995 National Student Paper Competition of the Earthquake Engineering Research Institute for his paper, "Modeling of the Nonlinear Behavior of Gravity Load Designed Infilled Frames."

Dean of Students Office

The Class of 1963 Diversity Awareness Award for the "student organization or program house that is most successful in using formal and/or informal learning to promote understanding, respect and amicable relations among students of different races and cultures" went to **Watermargin Education Program**.

The Hahn-Rotterdam Prize for "exceptional contributions to the development of innovative, high-quality student activities programming and for adhering to the highest human values while maintaining academic excellence" went to **Jill Meredith Nusbaum** of the Cornell University Program Board.

Scott Logan Aronson of the Cornell Concert Commission received the Daniel F. Mahaney Scholarship, awarded for "exemplary performance as a volunteer leader and as a student employee."

Winners of the Edgar A. Whiting Award for "exemplifying the personal characteristics and dedication of Edgar Whiting, director of Willard Straight Hall from 1930 to 1970, on behalf of the programs and services of student activities/development" were **Michael G. Merritt Jr.** and **Andrew Craig Swanson**.

Ecology and Systematics

Co-recipients of the Robert H. Whittaker Award are **Corey R. Freeman-Gallant** for his presentation, "Domes-

Continued on page 11

Hotel School's Drown Prize winner dishes out Hong Kong hospitality

By Darryl Geddes

Ever stay up late to watch television and come across one of those badly dubbed Kung Fu films? If so, you've probably heard the voice of Andrew P. Chworowsky.

Before entering the hospitality industry, Chworowsky, 32 – the winner of the 1996 Drown Prize, awarded annually to a top senior in the School of Hotel Administration – made a living in Asia providing English dubbing for Kung Fu movies and television programs.

"My talent was my ability to read the script and watch the movie at the same time," said Chworowsky, who estimates he dubbed more than 10,000 hours of Kung Fu films while living in Hong Kong in the early 1980s.

Despite a pay scale that was "pretty good," Chworowsky ditched the dubbing job in 1986. "It got mind-numbingly boring. It turned into a factory job, where all I was doing was reading scripts. I didn't see any future in it."

The next role he was offered was taking drink orders in a soon-to-be-opened restaurant in Hong Kong. "The owners wanted an American bartender to help set the right tone for their Chicago-style grill," he said.

Chworowsky signed on with the American-owned company, Windy City International of Hong Kong, in 1988 and has since played a key role in making the firm one of the

most successful restaurant companies in Asia.

After talking with Chworowsky and hearing how varied and unique his talents and young professional life have been, it's easy to see why a panel of Hotel School faculty selected him as the recipient of the \$15,000 Drown Prize – one of Cornell's richest undergraduate awards.

Chworowsky has demonstrated independence, perseverance, energy and industriousness in all he has done, and he also holds the promise of making a significant contribution to the hospitality industry.

The senior's road to winning the Drown Prize has been circuitous. Raised in Milwaukee, the son of a Lutheran minister, Chworowsky moved to Hong Kong as a teen-ager with his family. When the family decided to head back to the states, he decided to stay behind.

Then his chance meeting with the entrepreneurs who had plans to open a restaurant catering to the tastes of American business executives launched his successful hospitality career.

Chworowsky has held numerous positions with Windy City, including regional



Chworowsky

'There was no question as to where I would go. Cornell was often mentioned as the best school in the business.'

– Andrew Chworowsky

general manager, and he has helped open the firm's restaurants – Dick Ryan's Chicago Grill – in Hong Kong, Taiwan and Singapore.

"The restaurants provide an oasis to the growing population of American business executives traveling through Asia," he said.

Dick Ryan's has been successful in large part, he said, because it does what it does better than anyone else: offer quality food prepared American-style. "Our philosophy has been to not localize the food. We have no Chinese food on the menu, nor would we adjust any recipe to appeal to the Chinese palate."

That's straight forward marketing that works. Why offer lo mein on the menu when other establishments can make it better? Instead, you offer steaks, seafood and ribs.

Chworowsky decided to apply to Cornell's Hotel School after realizing a college degree would enhance his career.

"Management was considering me for an executive position, but the one thing that was holding me back was the lack of any theoretical or post-secondary education," he said.

"There was no question as to where I would go," he said. "Cornell was often mentioned as the best school in the business."

When Chworowsky returns to Hong Kong this July, he won't be the only employee at Windy City with a degree from the Hotel School. Two of his former Cornell classmates, Michael Domer '95 and Larissa Cook '95, are employed with the company.

So how will Chworowsky spend his \$15,000 Drown Prize award? "I'll probably invest it for now in mutual funds or something and then maybe consider investing it in a restaurant of my own, perhaps," he said.

Aside from Chworowsky, four other seniors were selected as Drown Prize finalists and have received \$1,000 cash prizes. They are: Megan Marie Machado of Williamsville, N.Y.; Johnny Ceballos of Woodside, N.Y.; Karen Lyn Thiessen of Boise, Idaho and Eric Charles Sinoway of Landing, N.J.

The Drown Prize, established and endowed by hotel owner Joseph W. Drown, is intended "to enhance not only the knowledge of young people but their independence and self-reliance so that they may contribute to the free society to which Drown credited his own success."

Students and faculty honored for their achievements

Continued from page 10

ticity and Sex: Lessons From Savannah Sparrows," and **William V. Sobczak** for "Microbial Responses to Variations in Dissolved Organic Carbon Along Subsurface Flowpaths in Stream Ecosystems."

1996 Teaching Awards, given in recognition of excellence in teaching by a graduate student, went to **Patricia Doak** and **Cynthia A. Wilczak**.

English Department

The Robert Chasen Memorial Poetry Prize was awarded to **Ellen Samuels** for "Forgiving the Body"; honorable mention went to **Anna Isabel DiDonno** for "Us Four."

Phoenix Mayet received the Dorothy Sugarman Poetry Prize; honorable mention went to **Barbara Yien**.

The Arthur Lynn Andrews Award for short fiction went to **Michael Cobb** for "Milo's Woods" in the undergraduate division and to **Julia Cumes** for "And What Music Will Accompany Us" in the graduate division; second place went to **Joshua Harmon** for "The Lighthouse Keeper."

First prize for the Corson Bishop Poetry Prize went to **Daniel Donaghy** for a selection of poems. Second-prize winners were **Peter Coviello** for "These Plainest Sentences" and **Jake York** for "Wake."

European Studies Institute

Frederic Conger Wood Fellowships for undergraduate students went to **Jasmina Burdzovic**, College of Human Ecology, and **Mark Klempner**, College of Arts and Sciences.

Michele Sicca Summer Research Grants went to, from the Arts College, **Carolyn Gray Anderson**, **Maria Blume**, **Ginger Diekmann**, **Leigh Anne Eubanks**, **Richard Gay**, **Mechele Leon**, **Colleen McFarland**, **Sophie Muetzel**, **Vicki Ellen Szabo** and **Kim Williams**; and, from the Ag College, **Oleg Biloukha** and **Jason Frost**.

Sarah Benson, Arts College, received the Manon Michels Einaudi Travel Grant.

Luigi Einaudi Graduate Fellowships went to Arts students **W. Eugene Cobble**, **Ulrich Krotz** and **Judith Surkis**.

Denise Bratton from Architecture, Art and Planning received the Mario Einaudi Fellowship.

Geological Sciences

The \$1,000 Chester Buchanan Memorial Scholarship, awarded to an outstanding senior geology major, went to **Michael A. Zimmer**.

Elise Millner won the \$1,000 Michael W. Mitchell Memorial Prize, awarded to a senior geology student who has proved adept in other fields as well as geology.

German Studies Department

The Simmons Award in German, which goes to the student who has done the best work in German, went to **Stephanie K. Wolf**.

One first prize and two second prizes were awarded in the Goethe Prize Competition. First prize of \$250 went to **John R. Crutchfield** for his essay "Language and the Mechanics of Presence in Herder's *Plastik*." Second prize of \$150 each went to **Christian Gundermann** for "Voodoeske

Blutbader: Hubert Fichte Between Ritual and Ego" and to **Christopher Clark** for "The Weg Not Taken: The Unexpected Politics of Gunter de Bruyn's *Buridans Esel*."

History Department

The Clyde A. Duniway Prize, worth \$75 in books to a history major, went to **Nicholas Daum**.

The two Anne MacIntyre Litchfield Prizes, worth \$275 in books awarded to two women seniors majoring in history, went to **Deirdre Daly** and **Kathleen O'Halloran**.

The George S. Lustig Prize, this year worth \$200 awarded to an outstanding senior planning to study history in graduate school, went to **Arthur C. Smith**.

School of Hotel Administration

The Clyde Robinson Awards went to the following students: the Freshman Award to **Clinton Wu**; the Academic Excellence Award to **Ana Kositchotitana**; the Service Award to **Felicia Sparkman** and **Allison Myatt**; the Leadership Award to **Tairea Mattox**; and the Dean's Award to **Burnell Goldman**.

The Dean's Awards went to the following students: Freshman Award of \$250 to **Tracey Gamble**; Sophomore Award of \$250 to **Amit Kiesel**; Junior Award of \$500 to **Kristina Foerster**; and Senior Award of \$500 to **Alexandra Jaritz**.

The following faculty awards were given: Freshman/Sophomore Awards to **Florence Berger** and **Rupert Spies**; Junior/Senior Awards to **Christopher Muller** and **Elizabeth Huettman**; Graduate Awards to **Timothy Hinkin** and **Linda Canina**; and Overall Teaching Award to **Bruce Tracey**.

College of Human Ecology

The E. Scott Maynes Award for Academic Achievement in Consumer Economics and Housing and Policy Analysis went to **Joseph Doyle**.

The following students received Elsie Van Buren Rice Awards in Oral Communications: first prize to **Tina Shiau**; second prizes to **Jonelle Bradshaw** and **Brian Finch**; third prize to **Sujin Lim**; and fourth prize to **Erin McCloskey**.

The winner of the Halpern Award was **Briana Barocas**. Honorable mentions went to **Erin Fitzpatrick**, **Kelly Gonzalez** and **Alexis Hartstone**.

Esther Jacob received the Hillier Interior Design Award. The following students were named Outstanding Seniors: **Jonelle Bradshaw**, **Joseph Doyle**, **Mary Ewing**, **Devin Gallagher**, **Jason Kahn**, **Miriam Levine**, **Erin McCloskey**, **Edmond Murphy**, **Laura Scheirer**, **Israel Soong** and **Melissa Wigderson**.

Those receiving Robinson Awards for Academic Excellence were: **Lisa Berman**, **Thomas Fong**, **Matthew Hollander**, **Daniel Katz**, **Jill Morganstern** and **Melissa Wigderson**.

Paul Eshelman won the Human Ecology Alumni/Kappa Omicron Nu Advising Award.

The Halpern Prize for Extension/Outreach went to **Frank Barry**.

Outstanding Dietetics Educator Award for New York State went to **Priscilla Tennant**.

The Gamma Sigma Delta Distinguished Teaching Award went to **Gary Evans**.

School of Industrial and Labor Relations

Lorraine Stokes won the James Campbell Memorial Award to honor her "academic excellence; personal qualities of humility and friendliness; and service to the school."

Clay Samford received the Irving M. Ives Award, given to the senior demonstrating "good faith, integrity, responsibility, cooperativeness and good will."

The Daniel Alpern Memorial Prize went to **Joyce Hoying** and **Derek Shaffer** in recognition of their scholarship and service to the school.

Michael E. Gold has been named as the first recipient of the Schering-Plough Exemplary Teaching Award, nominated by students and selected by the ILR School's Teaching Advisory Committee.

Linguistics

Assistant professors **Abby Cohn** and **Molly Diesing** received Appel Fellowships, recognizing teaching excellence and scholarly promise.

Denise Meyer was awarded a Clark Distinguished Teaching Award for teaching assistants.

Peace Studies

The Harrop and Ruth Freeman Prize in Peace Studies went to **Afra Afsharipour**, a government major in the College of Arts and Sciences, and to **Neil Giacobbi**, a senior in the School of Industrial and Labor Relations. They will both receive \$750.

Romance Studies

The Juliette McMonnies Courant French Prize for academic achievement, with special reference to facility of expression in French, went to **Mariah Magargee**.

The winners of the J.G. White Competition were as follows: J.G. White Scholarship to **Kristin A. Loberg**; Prize for Excellence in Spanish to **Nazaneen Grant**, **Jason Markham** and **Alisa Yang**; and Prize for Excellence in English to **Calie Santana** and **Isabel Ramos**.

College of Veterinary Medicine

The Horace K. White Prize for the student with the highest academic record during his or her veterinary training went to **Karen Fessler**.

Sarah Ford and **Liesl Breickner** received the Gentle Doctor Award, for a fourth-year student who, in the opinion of the faculty of the Department of Clinical Sciences, exemplifies enthusiasm, motivation and dedication to the delivery of excellent veterinary patient care.

The Norden Distinguished Teacher Award, for a full-time member of the veterinary medical faculty who has shown continued excellence in teaching, went to **Dr. Thomas Divers**.

Dr. Peter Daels won the Pfizer Animal Health Award for Research Excellence, presented to a young investigator whose research achievements are likely to have a significant impact on our understanding of the biology or medical management of animals.

CALENDAR

May 23
through
June 6

All items for the Chronicle Calendar should be submitted (typewritten, double spaced) by campus mail, U.S. mail or in person to Chronicle Calendar, Cornell News Service, Village Green, 840 Hanshaw Road.

Notices should be sent to arrive 10 days prior to publication and should include the name and telephone number of a person who can be called if there are questions.

Notices should also include the subheading of the calendar in which the item should appear.

exhibits

Johnson Art Museum

The Herbert F. Johnson Museum of Art, on the corner of University and Central avenues, is open Tuesday through Sunday from 10 a.m. to 5 p.m. Admission is free. Telephone: 255-6464.

- "Still Time: Photographs by Sally Mann," through May 26.
- "A Life Well Lived: Fantasy Coffins of Ghana by Kane Quaye," through June 16.
- "The Gertrude and David Tucker Collection of American Painting," through July 7.
- "Methods and Media: 20th Century Sculpture From the Collection," through Aug. 11.
- "Prints of Darkness: Images of Death," through Aug. 4.
- "Class of 1951 Prints," June 1 through Aug. 11.

Hartell Gallery (M-F 8 a.m.-5 p.m.)

B.F.A. Exhibitions, through May 25.

Kroch Library Exhibition Room 2B

"Invention and Enterprise: Ezra Cornell, a 19th-Century Life," curated by Elaine Engst, university archivist, through June 9.

Tjaden Gallery (M-F, 8 a.m. to 5 p.m.)

- B.F.A. Thesis Shows, through May 24.
- Sculpture by Sandra Toro, May 25-27.

Veterinary Medical Center

Paintings by Corinne T. Kenney, DVM '62, are on display in the center's gallery through June 9.

Willard Straight Hall Art Gallery

"Firefighters and EMTs," photographs by Kristine Kirk, May 28 through June 10.

films

Films listed are sponsored by Cornell Cinema unless otherwise noted and are open to the public. All films are \$4.50 (\$4 for students and children under 12), except for Tuesday night Cinema Off-Center at the Center for Theatre Arts (\$2) and Saturday or Sunday matinees (\$3.50). Films are held in Willard Straight Theatre except where noted.

Thursday, 5/23

"The Breakfast Club" (1985), directed by John Hughes, with Molly Ringwald and Judd Nelson, 7:15 p.m.

"Bullet in the Head" (1990), directed by John Woo, with Tony Leung, Jacky Cheng and Waise Lee, 9:30 p.m.

Friday, 5/24

"Georgia" (1995), directed by Ulu Grosbard, with Jennifer Jason Leigh, Mare Winningham and Ted Levine, 7:15 p.m.

"Kicking and Screaming" (1995), directed by Noah Baumbach, with Chris Eigeman, Parker Posey and Eric Stoltz, 9:45 p.m.

Saturday, 5/25

"Kicking and Screaming," 7:15 p.m.

"Georgia," 9:30 p.m.

Sunday, 5/26

"Kicking and Screaming," 8 p.m.

Monday, 5/27

"Pinky" (1949), directed by Elia Kazan, with Jeanne Crain, Ethel Waters and Ethel Barrymore, 7 p.m.

"Georgia," 9:15 p.m.

Tuesday, 5/28

"Georgia," 7 p.m.

"Kicking and Screaming," 9:30 p.m.

Wednesday, 5/29

"A Better Tomorrow II" (1987), directed by John Woo, with Chow Yun Fat, Leslie Cheung and Ti Lung, 7:15 p.m.

"Georgia," 9:15 p.m.

Thursday, 5/30

"Bottle Rocket" (1996), directed by Wes Anderson, with Owen Wilson, Luke Wilson and Robert Musgrave, 7:15 p.m.

"A Better Tomorrow II," 9:30 p.m.

Friday, 5/31

"The Neon Bible" (1995), directed by Terence Davies, with Gena Rowlands and Jacob Tierney, 7:15 p.m.

"Bottle Rocket," 9:30 p.m.

Saturday, 6/1

"Bottle Rocket," 7:15 p.m.

"The Neon Bible," 9:30 p.m.

Sunday, 6/2

"The Neon Bible," 8 p.m.

Monday, 6/3

"Bombshell" (1933), directed by Victor Fleming, with Jean Harlow, 7:15 p.m.

"Bottle Rocket," 9:30 p.m.

Tuesday, 6/4

"City of Lost Children" (1995), directed by Jean-Pierre Jeunet and Marc Caro, with Ron Perlman, Daniel Emilfork and Judith Vittet, 7:15 p.m.

"Bottle Rocket," 9:30 p.m.

Wednesday, 6/5

"Hardboiled" (1992), directed by John Woo, with Chow Yun-Fat, 7:15 p.m.

"City of Lost Children," 9:50 p.m.

Thursday, 6/6

"How Green Was My Valley" (1941), directed by John Ford, with Walter Pidgeon and Maureen O'Hara, 7 p.m.

"Hardboiled," 9:30 p.m.

graduate bulletin

• **Move to Caldwell:** The Graduate School offices have moved from Sage Hall to Caldwell Hall.

• **Commencement:** Commencement is on Sunday, May 26. Commencement information packets have been mailed to all recipients of August 1995 and January 1996 degrees. Candidates for May 1996 degrees: Professional Master's degree candidates may obtain packets in graduate field offices; M.A., M.S. and Ph.D. degree candidates may pick up packets at the Graduate School information desk, first floor, Caldwell Hall.

• **Diploma distribution:** Diplomas will be available for May 1996 degree recipients who completed requirements by mid-March. Many fields and/or colleges will be distributing diplomas at ceremonies after commencement. Diplomas will be mailed to other recipients.

• **Ph.D. recognition event:** The ceremony to honor Ph.D. recipients will be held in Barton Hall at 5 p.m., Saturday, May 25. Family, friends and faculty advisers are invited; reception will follow. Candidates who participate must wear a cap and gown and must register in Barton Hall between 3:45 and 4:15 p.m. before the ceremony.

• **Faculty:** Graduate faculty meeting will be held on Friday, May 24, at 4 p.m. in Caldwell Hall. The meeting is solely for the purpose of voting on May degrees.

• **Summer registration:** Forms for summer graduate registration are available Graduate School information desk, first floor, Caldwell Hall. Student ID and in-person registration are required. Students must register if they are 1) receiving financial aid during the summer (such as fellowships, summer loans, assistantships, travel grants, or tuition awards); 2) wish to use campus facilities during the summer; or 3) are off campus but need to be registered for summer study. Graduate students who have been registered for a regular semester

during the preceding academic year do not pay tuition for non-credit summer registration. Students approved for summer residence credit must pay the appropriate pro-rated Graduate School tuition rate. Tuition must be paid for summer courses taken through the School of Continuing Education and Summer Sessions.

• **Dissertation and thesis seminars** will be held in Room 100, Caldwell Hall. The master's thesis seminar will be on Monday, June 17, at 3 p.m. The doctoral dissertation seminar will be Tuesday, June 18, at 3 p.m. The thesis adviser will discuss preparing and filing theses and dissertations; students, faculty and typists are encouraged to attend.

music

Department of Music

• May 25, 3 p.m., Arts Quad: The Cornell University Wind Ensemble presents its Senior Week Concert. Part of the commencement week activities at Cornell, the concert repertoire includes favorite works played by the Wind Ensemble during the 1995-96 academic year. The hourlong concert features patriotic songs and marches, as well as seven traditional Cornell songs: March on Cornell, Davy, Cornell Victorious, Carmelian and White, New Cornell Fight Song, Fight for Cornell and The Big Red Team.

• May 25, 8:15 p.m., Bailey Hall: The Cornell University Chorus and Glee Club present a commencement eve concert featuring a variety of works, including traditional Cornell songs. Tickets are \$5 in advance and \$6 at the door. Advance tickets can be purchased in the basement of Sage Chapel at either the Chorus or Glee Club office and at the Lincoln Hall ticket office, Monday through Friday, 9 a.m. to 1 p.m.

Bound for Glory

May 26: Albums from the studio. Bound for Glory is broadcast Sundays from 8 to 11 p.m. on WVBR-FM, 93.5 and 105.5.

religion

Sage Chapel

Susannah Heschel from Case Western Reserve will give the Baccalaureate Service May 26 at 8:30 a.m. in Sage Chapel. University organist is Annette Richards, and the Sage Chapel choirmaster is William Cowdery.

African-American

Sundays, 5:30 p.m., Robert Purcell Union.

Baha'i Faith

Fridays, 7 p.m., firesides with speakers, open discussion and refreshments. Meet at the Balch Archway; held in Unit 4 lounge at Balch Hall. Sunday morning prayers and breakfast, 7 a.m.

Catholic

Weekend Masses: Saturday, 5 p.m.; Sunday, 10 a.m., Anabel Taylor Auditorium. Daily Masses: Monday-Friday, 12:20 p.m., Anabel Taylor Chapel. Sacrament of Reconciliation, Saturday, 3:30 p.m., G-22 Anabel Taylor Hall.

May 25 Mass: 5 p.m. and 7 p.m. (Spanish Mass), Anabel Taylor Auditorium.

May 26: 8:30 a.m., Anabel Taylor Auditorium.

Christian Science

Testimony meetings sharing healing through prayer and discussion every Thursday at 7 p.m., Founders Room, Anabel Taylor Hall. For more information see <<http://www.msc.cornell.edu/~bretz/cso.html>>.

Episcopal (Anglican)

Sundays, worship and Eucharist, 9:30 a.m., Anabel Taylor Chapel.

Friends (Quakers)

Sundays, 11 a.m., meeting for worship in the Edwards Room of Anabel Taylor Hall. Discussions most weeks at 9:50 a.m., 314 Anabel Taylor Hall.

Jewish

Morning Minyan at Young Israel, 106 West Ave., call 272-5810.

Friday Services: Conservative: 6 p.m., Founders Room, Anabel Taylor Hall; Reform: 6 p.m., ATH Chapel; Orthodox: call for time, 272-5810, Young Israel.

Saturday Services: Orthodox: 9:15 a.m., One World Room, ATH.

Korean Church

Sundays, 1 p.m., chapel, Anabel Taylor Hall.

Latter-day Saints (Mormon)

Sunday services: Cornell Student Branch, 9 a.m., Ithaca ward, 1 p.m. For directions or transportation, call 272-4520, 257-6835 or 257-1334.

Muslim

Friday Juma' prayer, 1:15 p.m., One World Room, Anabel Taylor Hall. Daily Zuhr, Asr, Maghreb and Isha' prayers at 218 Anabel Taylor Hall.

Orthodox Christian (Eastern Orthodox)

Sundays, Divine Liturgy at 10 a.m., St. Catherine's Greek Orthodox Church, 120 W. Seneca St., 273-6884.

Protestant Cooperative Ministry

Sundays, 11 a.m., chapel, Anabel Taylor Hall.

Sri Satya Sai Baba

Sundays, 10:30 a.m., 319 N. Tioga St. For details call 273-4261 or 533-7172.

Zen Buddhist

Tuesdays, 5 p.m.; Thursdays, 6:45 p.m., chapel, Anabel Taylor Hall.

seminars

Agricultural, Resource & Managerial Economics

"Estimation of Production Technologies Under Output Price Uncertainty, Yield Uncertainty, Input-Specific Technical Inefficiency and Allocative Inefficiency," Chris O'Donnell, University of New England, Australia, May 31, 1 p.m., 401 Warren Hall.

Genetics & Development

"Dissecting the Mechanism of Mitochondrial Protein Translocation From Matrix to Intermembrane Space," Schichuan He, May 29, 12:20 p.m., small seminar room, Biotechnology Building.

Microbiology

"The Tunnel at the End of the Light: The Respective Roles of U, 15 and Other Genes Required for Herpesvirus DNA Cleavage/Packaging," Joel Baines, May 31, 12:15 p.m., Boyce Thompson Auditorium.

symposiums

Bioengineering

A "Universitywide Discussion on Bioengineering" will be held June 3 from 2 to 4 p.m. in 101 Phillips Hall. Topics and speakers include: "Engineering Drugs - An Atomic View of Biology," Jon Clardy, the Horace White Professor of Chemistry; "Micromachines for Bio-probes," Noel MacDonald, director of the Cornell Nanofabrication Facility and professor of electrical engineering; "Materials for the Future: Bio-inspired and Synthetic Polymers," Lynn Jelinski, director of the Center for Advanced Technology - Biotechnology and professor of engineering; "Biomedical Engineering to Build Improved Drugs and Rebuild Damaged Organs," Mark Saltzman, professor of chemical engineering; "Biological Engineering for a Sustainable World," Larry Walker, professor of agricultural and biological engineering; and "Connections for the Future," a roundtable discussion including the audience and speakers, with Peter Bruns, director of the Division of Biological Sciences.

miscellany

Alcoholics Anonymous

Meetings are open to the public and will be held Monday through Friday at 12:15 p.m. and Saturday evenings at 5 p.m. in Anabel Taylor Hall. For more information call 273-1541.

Emotions Anonymous

This 12-step group that helps people deal with emotional problems meets for a discussion meeting on Sundays at 7:30 p.m. and a step meeting on Tuesdays at 8 p.m. at the St. Luke Lutheran Church, 109 Oak Ave., Collegetown. For more information call 387-0587.

sports

Men's Hwt. Crew

May 24, at Pennsylvania
May 30-June 1, IRA at Camden, N.J.

Women's Crew

May 30-June 1, IRA at Camden, N.J.