

CORNELL Chronicle

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NOTABLE VISITORS

Three renowned speakers and scholars will visit campus this semester as A.D. White Professors-at-Large.

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New \$3 million institute is established to focus on working families

By Susan Lang

A new \$3 million institute at Cornell will look at how families are coping with changes in all stages of life and work.

The new Cornell Employment and Family Careers Institute, a Sloan Center on Working Families funded by the Alfred P. Sloan Foundation, will establish research, education and outreach programs to address the emerging realities of working families that are the result of fundamental changes that have occurred in recent years in the institutions of family and work. Its research will look at working families and issues, such as their decisions, stresses, beliefs and expectations and their coping strategies for options, parenting, child care and



Moen

financial decisions.

The institute is the first center on working families supported by Sloan and is a result of growing recognition of revolutionary changes in the interface between families and work.

"We are witnessing today the emergence of new cultural prototypes of family, community, work and career," said Phyllis Moen, director of the new institute. Moen is the Ferris Family Professor in Life Course Studies at Cornell and also the director of the Bronfenbrenner Life Course Center, under which the Cornell Careers Institute will be operating.

"This represents a change in both vision and behavior of individuals, families and employers in how they view both occupational careers and family arrangements. We want to identify the dynamic processes by which families respond successfully to these changing demands and opportunities. By doing so, we hope to form a basis for the design of careers, families and the life course into the next century."

Instead of looking at snapshots of working families at single points in time, the institute will take a life course approach that reflects the interweave of work, family and community roles as these change with age, changing circumstances and options. In other words, the researchers will be seeking to understand the interrelated trajectories of both the occupational and family "careers" and the series of movements that working husbands and wives take in and out of various roles and relationships as their job and family needs shift.

"The life course orientation will enable us to better understand the dynamic processes of adaptation and change over the life span of all the family members and the roles of occupational careers, technology in the home and workplace, and institutionalized structures and practices in families, workplaces and other institutions in the working families," Moen said.

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Minns Garden in bloom



Adriana Rovers/University Photography

Greg Schlachter '99, a natural resources major in Agriculture and Life Sciences, enjoys the Minns Garden floral display Sept. 5 while looking for insects for his Entomology 212 class. The garden is next to the Plant Science Building on Tower Road.

Grant enables technology transfer for edible vaccine

By Blaine P. Friedlander Jr.

Researchers at the Boyce Thompson Institute for Plant Research Inc. at Cornell now will begin exchanging new vaccine information with scientists in developing countries, starting with Mexico, thanks to a new Rockefeller Foundation grant.

"This is very good news. For the oral vaccines we're researching here, this clears the way for international technology transfer," said Charles J. Arntzen, president of Boyce Thompson Institute (BTI). "This grant is an endorsement, and it has become a first step in the process of bringing our research to people who can use it."

Traditional vaccines that inoculate children against enteric diseases like diarrhea and cholera are very expensive to send to



Arntzen

developing countries. Arntzen and BTI researchers are developing genetically changed foods that are grown with the vaccine already in them, as a cheap and easy way to deliver vaccines to children throughout the world.

For example, the BTI researchers have sought to genetically install the vaccine into bananas.

Specifically, the Rockefeller Foundation grant - \$58,000 for three years - will allow Miguel Gomez-Lim of the Centro de Investigación y de Estudios Avanzados del I.P.N. (CINESTAV), Mexico City, a gov-

ernment health agency, to collaborate with BTI researchers.

Gomez-Lim and his American colleagues will try to verify the value of "edible" vaccines and to begin educational efforts in Mexico to facilitate the rapid adoption of these vaccines for safe and effective use.

"The goal is to deliver a 'technology package' which makes the eradication of one or more infectious diseases possible - on a global scale," Arntzen said. While work progresses on the vaccines for enteric diseases, Arntzen hopes that this research eventually will lead to an edible HIV vaccine that can be used cost-effectively around the world as an inoculation against AIDS.

Earlier this year, BTI researchers showed that edible vaccines work in animal tests, by

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CU chemists create world's smallest wires

By Larry Bernard

Cornell chemists have created the world's smallest wires and encased them in a plastic polymer, an accomplishment that could lead to a host of new electrical or optical uses at the nanometer scale.

An electrical cord only a few atoms thick? That's about the size of it. The wires, only 6 angstroms in diameter, or just several atoms wide, could be kept separate or bunched together to make cables inside a polymer matrix, depending on the intended purpose, the researchers say. The wires can be up to at least 10,000 angstroms in length.

"No one has ever made wires this small before, so we're not sure what all the uses are going to be," said Francis J. DiSalvo, professor of chemistry who led the work with his Cornell colleague, Jean M.J. Frechet, also professor of chemistry.

The chemists published their report in the journal *Science* (Aug. 9, 1996), with Josh H. Golden, former doctoral student in both their laboratories now at Cytek Industries in Stamford, Conn.; John Silcox, professor of applied and engineering physics and director of Cornell's Materials Science Center; Malcolm Thomas, a research support specialist in the Materials Science Center; and Jim Elman of Eastman Kodak Co. in Rochester, N.Y. The recent work was funded by the National Science Foundation, with earlier work funded by the U.S. Department of Energy.

Here is how they did it: They took atoms of the metallic substances molybdenum and selenium separated by lithium. By putting them in a solvent of ethylene carbonate - which polymerizes into polyvinylene carbonate - the lithium was separated out, leaving long strings of the metals. Then they added an agent to make the polymer. By doing so quickly, the organic polymers gelled before the wires had a chance to clump together.

"It's like trapping a small, skinny sausage in a big bowl of spaghetti," DiSalvo said. "We trapped the wires in the solution. The trick is to do it very fast, before they have a chance to clump."

The result: A plastic block laced with subnanometer-sized wires. To make cables of more than one wire held together, the

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Families *continued from page 1*

Faculty from the colleges of Human Ecology, Agriculture and Life Sciences, Arts and Sciences, School of Industrial and Labor Relations and the Johnson Graduate School of Management will collaborate, Moen said, to enlarge our understanding of working families from the vantage point of families. Initially, the researchers will focus on two-parent, middle-class families at four life course stages: the anticipatory (ages 20-30), the launching (ages 25-39), the establishment (ages 35-54) and the shifting gears (ages 50-75) stages.

"Our primary focus will be on mapping the reality of working families in particular contexts and particular life stages," Moen said.

Specifically, the researchers will focus on research that:

- Describes the actual experiences, family and career strategies, social networks, cultural models and expectations of working families in different contexts and at different life stages.

- Identifies similarities and differences among different subgroups, such as between husbands and wives, among couples in different types of jobs (such as corporate vs. non-profit service organizations), and cultural and ethnic groups regarding work-family lifestyles and parenting patterns.

- Maps out the different kinds of successful strategies working families use.

- Suggests potential opportunities for change, such as in policies, practices, technologies and strategies in families, communities and work organizations.

To do so, five programs of research will be established. Faculty and researchers will investigate the experiences and expectations of working families – the nature of the lives, lifestyles, social networks and challenges of contemporary two-career families; the cultural images of working families – emerging cultural models of family life and organizational careers at different stages of the life course; interlocking careers of husbands and wives – addressing how couples manage their dual careers and parenting responsibilities, looking at issues such as timing, sequencing, synchrony and turning points; couples' retirement transition – tracing the careers of husbands and wives and how the couples make decisions as they look toward retirement; and midlife transition and psychological coping – focusing on how men and women in midlife cope with work stress and work-family conflict.

In addition to collaborative research projects, the institute will develop a multidisciplinary graduate training program on the life course analysis of working families and outreach programs to promote understanding of the changing family/work interface and its implications in academic, corporate and policy communities.

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Cornell in times past



Division of Rare and Manuscript Collections, Cornell University Library

The decor has changed, the clothing has changed, but some things never change. Cornell students hit the books in Uris Library around the turn of the century.

BRIEFS

■ Survey offers research opportunity:

Cornell's Computer-Assisted Survey Team (CAST) in the School of Industrial and Labor Relations has been selected to assist the University of California at Berkeley this fall in conducting a nationwide telephone survey of Americans on their views of government goals and objectives. In return for CAST's assistance, Berkeley will give Cornell researchers privileged access to the data for one year, beginning Jan. 1, 1997. Also Berkeley is giving Cornell scholars an opportunity to provide input on the instrument.

"The information gathered by this survey might be useful for public policy experts and others who are studying government operations," said Yasamin DiCiccio, director for CAST.

Any Cornell researcher interested in the survey and access to the data should contact DiCiccio at 255-0148 or <yd17@cornell.edu> by Friday, Sept. 20.

The ILR survey facility will be one of 40 organizations across the country participating in this project. Each facility will conduct pre-Presidential election interviews and a short post-election re-interview with approximately 30 households in their area of the country. All facilities will use an Internet connection to a common computer-based

questionnaire. CAST uses state-of-the-art surveying software that is developed by UC-Berkeley (and was commissioned by the U.S. Census Bureau). This is the same software used by CBS News and RAND to conduct their surveys. The system ensures high quality of data by reducing the possibility for human error, reduces time and cost of data collection and allows for greater complexity and flexibility in the survey design. The ILR survey facility is located in 253 Ives Hall.

■ **Join Project PigeonWatch:** Team up with the Sciencenter and Cornell and participate in a nationwide study as you learn about pigeon biology, through the Cornell Lab of Ornithology's Project PigeonWatch.

The Sciencenter, Ithaca's hands-on science museum, is taking part in the project, which is a study of the habits and physiology of pigeons conducted by Cornell scientists.

Geared mainly towards fifth-, sixth- and seventh-graders, participation is free and open to all interested children and adults. Participants will begin collecting data on Sunday, Sept. 15, at 2 p.m. at the Sciencenter, 601 First St.

For more information, call Dan Cullen at 256-2231 or Kathleen Hunt at 272-0600.

OBITUARY

Dorsey W. Bruner, professor of veterinary microbiology emeritus and former chairman of the Department of Microbiology, Immunology and Parasitology, died Sept. 1 at Cayuga Medical Center. He was 89.

Bruner was an internationally recognized authority on the enteric diseases of animals and humans, including salmonellosis.

His teaching, which he began as an instructor at Cornell in 1931 and continued at the University of Kentucky, was interrupted by World War II. He served as a bacteriologist in the U.S. Army, rising to the rank of major. He returned to Cornell in 1949 and served as department chair from 1965 to 1972, the year he was appointed professor emeritus.

After earning D.V.M. (1933) and Ph.D. (1937) degrees at Cornell, he published more than 140 scientific papers. He was the author or co-author of the first five editions of the text *Hagan and Bruner's Microbiology and Infectious Diseases of Domestic Animals* and editor of the *Cornell Veterinarians* for 20 years.

In 1972, Bruner's achievements in bacteriology were recognized with the awarding of the American Veterinary Medical Association's 12th International Congress Award.

Memorial contributions may be made to the Dorsey W. and Beatrice F. Bruner Scholarship Fund at the Veterinary College.

NOTABLES

Charles E. McCulloch, professor of biological statistics in the Department of Plant Breeding and Biometry, was named a Fellow of the American Statistical Association (ASA). The professional society of more than 18,000 statisticians, quantitative scientists and users of statistics was founded in 1839. One of 60 ASA members designated as Fellows at the Joint Statistical Meetings Aug. 4-8 in Chicago, McCulloch was cited for "outstanding professional contribution and leadership in the field of statistical science."

Jose N. Maldonado recently was named Mechanical Engineer of the Year,

1996-1997, by the Instituto de Ingenieros Mecanicos del Colegio de Ingeniero y Agrimensores de Puerto Rico. Maldonado graduated from the University of Puerto Rico in Mayaguez in 1956 and joined Cornell in 1969 as a mechanical engineer at the Arecibo Observatory in Puerto Rico. Prior to that, he had been the Arecibo area superintendent for the Puerto Rican Power Authority. In 1970, he was named head of the maintenance department at the Arecibo Observatory and in 1979, assistant director for facilities. Maldonado, a native of Arecibo, has played a critical role as site project manager for both the first National Science Foundation and NASA-sponsored upgrad-

ing of the Arecibo telescope in the 1970s and the major reconstruction of the telescope currently approaching completion.

Jessika Trancik, a senior majoring in materials science and engineering, is one of three recipients nationwide of an ASM Outstanding Scholars Award. The \$2,000 award, for educational expenses for one academic year, is given to an outstanding undergraduate who demonstrates "exemplary academic and personal achievements, interests and potential in . . . materials science and engineering." She will receive her award Oct. 6 at Materials Week '96, a major materials conference to be held in Cincinnati.

Cornell's Hartmanis named to head NSF's computer science directorate

By Larry Bernard

Juris Hartmanis, the Walter R. Read Professor of Engineering and professor of computer science at Cornell, has been appointed assistant director of the National Science Foundation (NSF) Directorate of Computer and Information Science and Engineering (CISE).

An expert in the theory of computation and computational complexity, Hartmanis will lead the directorate, which has responsibility for NSF's efforts with the Internet, supercomputers, robotics and intelligent systems, information processing systems and computational research.

"We are thrilled to have someone with the perspective and expertise of Dr. Hartmanis," NSF Director Neal Lane said. "He will be an exciting leader of the directorate at a time when



Hartmanis

computers are affecting nearly every aspect of American life and changing every field of science and engineering."

Hartmanis, who begins his new role this month, has been at Cornell since 1965. He was a founding member of the Computer Science Department and served as its first chair. Prior to that, he helped bring computer science research to the General Electric Research Laboratory. He is a member of the National Academy of Engineering, and in 1993 he received the Turing Award, the highest award in computer science. He also is a Fellow of the American Academy of Arts and Sciences, the American Association for the Advancement of Science and the New York State Academy of Sciences, and he is a foreign member of the Latvian Academy of Sciences.

"It's been a magnificent ride, like sitting in a cockpit and observing a brand new science being created. I am delighted and surprised at what impact computer science is having," Hartmanis said. "When I decided to be a computer scientist, I couldn't imagine the dramatic impact it has had."

Hartmanis was born in Latvia and emigrated to Germany

after World War II. He received his undergraduate degree in physics from the University of Marburg, then came to the United States to receive a master's from the University of Kansas City and a doctorate from the California Institute of Technology, both in mathematics. Hartmanis then taught at Cornell and Ohio State University before going to GE.

Hartmanis sees the exponential growth in computing power coupled with the growth in communications capabilities as one of the most exciting aspects of computer science today.

In 1992, Hartmanis chaired a National Research Council Study that resulted in the book *Computing the Future: A Broader Agenda for Computer Science and Engineering*. The two years of work with the committee, he said, helped focus his interest on computer science policy.

NSF is an independent federal agency created by Congress in 1950 to promote and advance scientific progress in the United States. The CISE directorate awards more than \$275 million annually.

Changes at Statler cater to the public

By Darryl Geddes

The Statler Hotel's Terrace Restaurant, long the private dining room of Cornell's Statler Club, is now open to the public, serving lunch Monday through Friday from 10 a.m. to 2 p.m.

For many years, the Terrace Restaurant, located on the ground floor of the Statler Hotel, was open only to members of the Statler Club, a private faculty-staff organization. But the cost of renting the Terrace Restaurant became too prohibitive for the Statler Club, which has seen a steady decline in membership.

"We had to do something to balance the books," said Professor Joel Silbey, former Statler Club president. "In considering all possibilities, we decided to reduce the space we needed at the Statler Hotel."

The Statler Club's new contract with the hotel calls for the use of a much smaller portion of the Terrace Restaurant, seating 75 instead of 200 people. The Statler Club has 1,297 members.

"The reduction in space used by the Statler Club allows us to provide an additional 225 seats for public dining," said Steven R. Grant, the hotel's director of food and beverage service.

The opening of the Terrace Restaurant, he said, is especially good news for those who frequented the Sage Hall dining facility, which has been closed as the building is being renovated.

"The Terrace Restaurant adds another option for diners on the central campus," he said.



Charles Harrington/University Photography

The Terrace Restaurant on the ground floor of the Statler Hotel on campus is now open to public dining.

With Banfi's and the opening of the Terrace Restaurant, the Statler Hotel is able to offer customers two distinct dining experiences, Grant said.

"The Terrace Restaurant provides diners with a casual setting and light menu, while Banfi's - with its table service - continues to offer a more formal luncheon option," he said.

Menu options at the Terrace Restaurant, which will continue its cafeteria-style service, have been expanded to meet consumers' varied appetites. Pizza, calzones and a daily special pasta dish will be regular menu items, along with made-to-order hot and cold sandwiches

and the soup and salad bar. Upgrades are being made to the kitchen and the decor, with brass fixtures replacing stainless steel ones. Banfi's will continue to offer a gourmet menu and soup and salad-bar service for lunch.

The Statler Club continues to rent the lounge adjoining the Terrace Restaurant and the Wilcox Library. Coffee service for club members will be available from 11 a.m. to 2 p.m. Monday through Friday in the Regency Lounge.

In addition to the changes at the Terrace Restaurant, the hotel has overhauled operations at Mac's Grab & Go, located on the ground floor of the hotel. This

favorite hangout for hotel students now resembles a Crate & Barrel outlet, offering self-serve foods and gourmet coffee. The kitchen, which served up hot fare for Mac's, now will become a teaching laboratory for the Hotel School. Mac's Grab & Go hours are Monday through Friday 7:30 a.m. to 5:30 p.m. Student input was sought on planning the changes to Mac's, Grant said.

"These changes provide the Statler Hotel with more opportunities to serve and meet the needs of our campus customers and other guests," he said.

The Cornell Card may be used at the Terrace Restaurant and Mac's Grab & Go.

Gannett revamps client services to meet changing health-care needs

By Jacquie Powers

Gannett Health Center is consolidating its services, renovating its space, revising its fee structure and improving its student insurance plan this fall to accommodate changing health-care patterns nationwide and to better serve its clients, Janet Corson-Rikert, M.D., University Health Services (UHS) director announced recently.



Corson-Rikert

"We must change the way we do business in order to deal with rising costs and to meet increasing federal and state mandates as well as the needs of our clients," Corson-Rikert said. "We want to stay focused on the expectations of those who rely on our services for quality health care at low cost. At the same time we will be able to provide shorter waits to see clinicians and therapists, access to specialists, more comfortable and confidential waiting areas, volunteer opportunities and health education programming across campus."

Among the changes, the health center has instituted a \$10

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— Janet Corson-Rikert

co-payment for students' clinician and psychological services therapist visits. The \$10 per visit co-payment fee, which pays a portion of the cost of each visit to a clinician or therapist, applies to all students, including those on the Cornell Student Health Insurance Plan.

Traditionally, Cornell has supported patient care through general operating funds. As costs have risen, UHS has charged patients for services that usually are covered by health insurance and has provided most other services

without charge. With the limitations on reimbursement imposed by managed care, "fee-for-service income" has not kept up with the ever-increasing budget demands, Corson-Rikert explained.

She added that UHS is determined that expenses relating to health care should not be a barrier to receiving needed services. Students with financial concerns should talk with a provider or representative of the Billing Office, and expenses may be charged to the bursar bill or charge card.

The \$1.8 million renovation project, scheduled for completion in late fall, will rectify many of Gannett's space problems, Corson-Rikert said. The university's investment in this project (from university building reserve funds, not from patient fees), will provide more examination rooms, a handicapped accessible entrance and reception area, more confidential patient consultation areas, more offices and group space for Psychological Services and will ensure compliance with state laboratory requirements, she added.

As part of an effort to consolidate services, the center will continue to provide access to 24-hour care for Cornell students but will close from midnight to 8 a.m. Students who need care

Continued on page 4

World's smallest wires *continued from page 1*

researchers just increased the amount of metallic grains.

"We polymerize it very quickly using light. It freezes the wires in whatever orientation they are in," said Frechet, a polymer chemist. "What is remarkable is that this is so tiny – the size of a molecule – and we can do that. We can't do anything very useful with them yet, but this is the way science progresses. In time, we will. For now we can study their interaction with light."

The researchers did not know for sure that they had succeeded until they gave the samples to Cornell's Materials Science Center, where Silcox and Thomas subjected them to scan-

ning transmission electron microscopy (STEM). The images confirmed that the wires were in place. The microscopists used an imaging technique in which the atomic number of the metallic ions are distinguished from the polymer's organic materials, which have lower atomic numbers.

The images showed single wires from 6 angstroms in diameter, double wires of about twice that size and groups of wires, or cables, up to 40 angstroms in diameter, all of which can act as electrical conductors.

"We could not have done this without the Materials Science Center," Frechet said. "It brings together scientists from different dis-

ciplines who otherwise might not be collaborating." Also making the feat possible was having a graduate student, Golden, who was skillful enough to work in both solid-state and polymer chemistry labs.

Now that they have shown it is possible to make such materials, the researchers are turning their attention to what they can do with them. The chemists are trying to use the new structures as membranes, in which the wires act as a solid-state catalyst. Other possibilities, they say, include anti-static polymeric materials for microelectronics, such as in the packaging of chips or for computer housings, and anti-static agents for film. In many cases,

static discharges can destroy sensitive electronic equipment or leave a blotch on film.

"Part of the problem is in the basic science," DiSalvo said. "We can make these perfect wires 6 angstroms in diameter. How do you make electrical contacts for wire that thick? We have more basic science to think about. What happens to the properties when you go from bulk to a single thin wire? Maybe now we can test some theories that propose unusual behavior of such narrow wires."

The scientists also would like to understand how these wires might behave under different conditions, such as high and low temperatures.

Oral vaccine *continued from page 1*

feeding animals raw potatoes that had been modified to include the vaccine agent. Human clinical trials already have begun with raw potatoes.

Enteric, or diarrheal, diseases kill more children in developing countries than any other diseases. For children under age 5 in developing countries, one-third of deaths are from these types of illnesses. Almost 25 percent of children who die between the ages of 5 and 14 lose their lives to enteric illnesses. These diseases account for between 3 million and 5 million children's deaths annually, and many could be prevented if such vaccines were available.

"If less expensive vaccines were available, they would have an immediate impact around the world," Arntzen said. "A crop can be made to produce 'edible vaccines,' and these vaccines will elicit an immune response when the food is eaten." When mice were given the edible vaccine, Arntzen explained, they produced antibodies that inactivated diarrhea-causing bacterial toxins.

Cost is a major factor: traditional vaccines today cost between \$50 and \$100 apiece, while this new mechanism – the banana – costs only pennies to deliver.

Eight banana plants grow in the institute's greenhouse on the Cornell campus. With proper fertilization, lighting, temperature and nurturing, the large-leaved, 14-foot-high plants each produce 100 pounds or more of bananas, said Gregory May, assistant research scientist and part of the research team studying the plant genetics. He said now that researchers know the plants will survive the long Ithaca winters, the team has begun to splice the genes into the banana plants.

Over the next 12 to 18 months, the researchers will conduct feeding studies and generate bananas that express the virus in order for it to be effective as vaccine, said Hugh Mason, BTI assistant research scientist, who is a viral expert.

Elizabeth Richter is the research team's plant genetics engineer, and Nicole Higgs is the cell biologist in charge of



From left, research team members Nicole Higgs, Hugh Mason and Charles Arntzen, president of Boyce Thompson Institute, and Rodolfo Lopez-Gomez, a visiting scientist from Mexico, pose among banana plants used in developing edible vaccine.

regenerating plant tissue to make the project sustainable.

This research may be helpful on the farm, as well. Animals as well as humans could benefit from this technology, Arntzen said.

For example, the technology could be used to deliver vaccines to improve animal disease prevention or for feed-

ing agricultural livestock. Currently, livestock is given antibiotics in their water or through other expensive means to combat a variety of diseases.

BTI is the only major private, independent not-for-profit research institute in the United States focused exclusively on plant research.

Valerie Lyon appointed new Health Services administrator

Valerie Lyon has been appointed as administrator of University Health Services. A 1991 graduate of Cornell's Sloan Program for Health Services Administration, Lyon has served the past four years as operations director of Health Services Medical Group in Cortland.

"Valerie Lyon brings a range of experience appropriate to our needs," said Janet Corson-Rikert, M.D., director of University Health Services. "Her expertise in health-care operations, financial planning and program development will be a great asset to us as we seek to provide consistent quality health care for the Cornell community."

As administrator, Lyon is responsible for fiscal operations, financial planning and ad-

ministration of University Health Services, which includes a staff of 125 clinicians, nurses, physical therapists, health educators and administrative staff.

"I am excited and enthusiastic about returning to Cornell University in a leadership role at Gannett Health Center," Lyon said. "I look forward to working with Dr. Corson-Rikert, the staff at Gannett and the community to provide quality care while maintaining an efficient, cost-effective health service which will succeed in our rapidly changing health-care delivery environment."

Lyon graduated from Ithaca College in 1983 with a B.S. in health administration. Since that time, she has worked in various areas of the health-care field.

Community Report offers events calendar

Cornell's *Community Report and Campus Events* publication is being mailed this week to almost 40,000 households in Tompkins County.

The 16-page report includes a calendar listing of cultural, performing arts and athletic events on campus.

"Area residents asked for more information about campus events, so we have 12 pages of activities that are available to the public," said David I. Stewart, Cornell's director of community rela-

tions. "The 1996-97 report also includes information on how to access campus-events listings from home or office computers via the World Wide Web.

"In addition to campus events, the Cornell publication includes a schedule of off-campus performances and exhibits that has been provided by the Community Arts Partnership," he said.

Challenge Industries has prepared the mailing, which should arrive in homes by the week of Sept. 16.

Gannett changes *continued from page 3*

during this time may contact a Gannett nurse or receive treatment at Cayuga Medical Center. Cost savings will allow the center to focus resources on regular daytime operations.

"We looked carefully at the experience of the many universities who closed their overnight units during the past decade," Corson-Rikert said. "They found that they are better able to serve the needs of their students by developing alternative options for nighttime services and reallocating resources to support the health-care priorities of their students. We expect our experience will be as positive."

Over the past several years, the number of admissions to Gannett's Overnight Unit has decreased significantly. The inpatient census has declined approximately 30 percent in the past four years. Last year, the average number of patients was 1.6 per day. The service also has functioned as an after-hours clinic, with the vast majority of visits occurring between 5 and 8 p.m. An average of 1.6 patients sign in after 8 p.m. each evening; 0.9 after 11 p.m.

Under the new plan, which went into effect Aug. 24, Gannett Health Center has closed its Overnight Unit but provides access to 24-hour care for Cornell students. The following services are available:

- Anyone with a health-care emergency (those requiring immediate attention), any time of day or night, should call the Cornell Police at 255-1111. They will arrange emergency transportation and a connection with the appropriate health-care provider.
- Gannett's regular hours are:

Monday through Friday: 8:30 a.m. to 4:30 p.m.

Saturday: (Walk-In Service only) 8:30 a.m. to noon.

- After regular hours, patients may be seen for urgent care (i.e., cannot wait till morning) at Gannett until midnight, seven days a week (255-5155).

- Although the Health Center building is closed daily from midnight to 8 a.m., students with urgent physical or mental health concerns that are not an emergency have two options:

- They can consult with a UHS nurse by phone (255-5155) who can advise them and, if necessary, arrange a counselor phone consultation or transportation to the Cayuga Medical Center Emergency Room.

- They can go directly to the Cayuga Medical Center Emergency Room.

- Patients who require 24-hour care or who need to be observed overnight may be referred to Cayuga Medical Center.

The new Student Health Insurance Plan for 1996-97 offers better coverage for a lower rate than the 1995-96 plan, Corson-Rikert said. Provided by an insurance carrier that deals exclusively in college health insurance, the managed-care plan includes prescription drug coverage, expanded outpatient mental health benefits and an optional dental plan.

Students can purchase student health insurance for \$665 (spouse/same-sex partner: \$1,635; child or children: \$933) per year. For more information on the plan, contact the Chickering Claims Administrators at 800-859-8475.

CORNELL RESEARCH

CU materials scientists smooth out atomic wrinkles on silicon wafers

By Larry Bernard

Cornell materials scientists have come up with a novel technique that could vastly improve the performance and yield of silicon microelectronic and optical devices, which are used in semiconductor integrated circuits that power everything from computers to telephones.

One of the problems in further miniaturization of devices is that the surface of silicon wafers – the platform on which computer chips are made – can be irregular at the atomic level. Crystals of silicon are made up of sheets of atoms stacked in a very regular way. The surfaces of the crystalline wafers ideally would consist of a smooth atomic plane with all the atoms at the same level.



Blakely

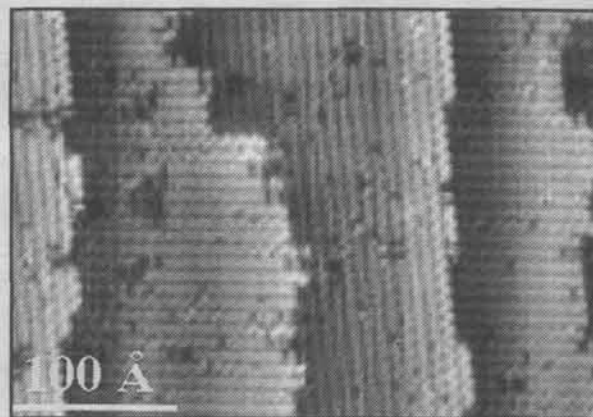
On real surfaces, however, the level of the surface varies from one spot to another so that the real surface consists of short, smooth terraces, each ending in a step of atomic dimensions – a distance of about 1.5 nanometers. In current manufacturing technology, these atomic steps are not a problem because devices are not yet small enough for an exactly flat surface to be necessary. But the next generation of integrated circuits will require silicon surfaces that are perfectly smooth.

Cornell materials scientists have created arrays of atomically flat silicon surfaces – essentially eliminating these atomic steps and overcoming one of the major hurdles to further miniaturization.

"We are able to create extensive regions on a silicon wafer that have no atomic steps," said Jack Blakely, the Cornell professor of materials science and engineering who led the work. "Silicon wafers can be patterned to have larger areas that are totally step-free."

The benefit: "It should now be feasible to make smaller devices with better control of the dimensions, at the atomic level, and it should eliminate the harmful features of the surface that could get through the manufacturing process," Blakely said.

Blakely and co-authors So Tanaka, a doctoral student in his lab; C.C. Umbach, former Blakely doctoral student



Blakely, et al.

This scanning tunneling microscope image of a typical silicon wafer surface shows steps each of a height corresponding to one atom spacing. Here, four atomic steps are separated by flat atomic planes, or terraces. Rows of silicon atoms are clearly visible on the terraces. Cornell scientists have developed a process to increase the areas of perfect atomic terraces by a factor of greater than 1,000, producing a step-free surface.

now a Cornell research associate; and Ruud M. Tromp and M. Mankos of IBM Watson Research Laboratory in Yorktown Heights, N.Y., describe their work in the journal *Applied Physics Letters* (Aug. 26, 1996) in a paper, "Fabrication of Arrays of Large Step-Free Regions on Silicon Wafers." Cornell Research Foundation has applied for a patent on the technology and is seeking a licensing partner. The work was funded by a grant to Blakely's research group at Cornell by the National Science Foundation and by the NSF-funded Materials Science Center at Cornell.

Here is how they did it: The scientists created a grid of ridges on the surface of the wafer and cleared the intervening squares of their atomic steps by forcing them into the ridges. Think of it as the way a farmer might clear a square field by moving all the boulders out to the edges. The boulders become localized in the wall surrounding the field.

In this case, the researchers created the grid at the

'It should now be feasible to make smaller devices with better control of the dimensions, at the atomic level...'

— Jack Blakely

Cornell Nanofabrication Facility using electron beam lithography, which made a series of ridges that serve as boundaries. Each square, about 10 micrometers wide, has about a billion atoms on it, with several thousand atomic steps all across the square. The ridges are about 0.5 micrometers high and 1 micrometer wide.

They subjected the sample to ultra-high vacuum and then high temperatures, within the window 1,020 to 1,150 degrees Centigrade. At these temperatures, silicon atoms are detached from the atomic steps so that the steps migrate to the ridges at the boundary of the square, leaving the surface of the square atomically flat.

The Cornell team has made grids with dimensions from 2 micron-wide to about 50 micron-wide squares, and were successful in clearing the atomic steps up to about 10 microns. The step-free regions are arranged in a regular array so that an entire wafer could be prepared for manufacture of devices all on step-free surfaces.

They confirmed what they had achieved by using low-energy electron microscopy at the IBM Watson Research Lab to get pictures of the atomic steps. Previous work in this area used a scanning tunneling microscope at Cornell that Blakely and his group built, using resources of the Materials Science Center.

An advantage to this technique is that all the technology currently is available, and industry already has the tools.

"It is easily implemented, too," Blakely said. "Circuits built on step-free surfaces can be designed with smaller dimensions and utilize thinner semiconductor channels and insulating layers to increase performance and decrease power consumption. By having it flat, this could be an ideal surface on which to build an integrated circuit."

He added, "It's a very simple technique, so it has some elegance due to its simplicity."

Noted architects and critics join Architecture, Art and Planning symposium

By Darryl Geddes

Richard Meier, architect of the Getty Center – the \$770 million arts and cultural complex under construction in the Santa Monica Mountains – heads a list of distinguished artists, educators and critics who will offer insight into America's cultural climate and artistic professions during a symposium Oct. 4 and 5 at Cornell.

The symposium is part of the 125th anniversary celebration of Cornell's College of Architecture, Art and Planning.

"We are thrilled to have attracted some of the foremost thinkers and practitioners in the fields of architecture, art and planning," said Kent Hubbell, the Nathaniel and Margaret Owings Distinguished Alumni Professor and architecture department chair. "I expect this noteworthy gathering to uncover new ideas of how our professions will embrace the future."

Symposium presenters are:

• Henry N. Cobb, founding principal of the New York firm Pei Cobb Freed & Partners, where he has served as principal design partner for various buildings and several urban planning projects, among them the John Hancock Tower in Boston and Credit Suisse First Boston headquarters at Canary Wharf in London. Cobb is former chairman of the Department of Architecture at the Harvard Graduate School of Design and a recipient of the 1995 ACSA/AIA Topaz Medallion for Excellence in Architectural Education. He will present "The Future of Our Professions" Oct. 4 at 8 p.m. in Statler Auditorium, Statler Hall.

• Ann Markusen, the State of New Jersey Professor of Urban Planning and Policy Development and director of the Project on Regional and Industrial Economics at Rutgers University. A recipient of a Brookings Institution fellowship, Markusen has co-authored several books on high technology and American economic development, including *Dismantling the Cold War Economy* and *High Tech America*. She will present the main address at a professional practice panel Oct. 5 at 9 a.m. in David L. Call Alumni



Meier



Cobb



Danto



Markusen

Auditorium, Kennedy Hall.

• Richard Meier, one of the world's most acclaimed and influential architects. In 1984 Meier became the youngest winner of the Pritzker Prize, often referred to as the Nobel Prize for architecture, and five years later became only the 13th American in 145 years to receive the Royal Gold Medal from the Royal Institute of British Architects. His works include the High Museum of Art in Atlanta and the Museum of Contemporary Art in Barcelona. In 1984 he landed his largest U.S. commission – the Getty Center in Los Angeles. This \$770 million arts center, which will house an art museum and offices of the Getty Trust and Conservation Institute, is being called one of the nation's most ambitious cultural projects. The project, already in the works for over a decade, is catapulting Meier to new celebrity status. Earlier this year, *Architecture* magazine devoted almost an entire issue to his work, and portrait photographer Annie Leibovitz shot Meier for a *Vanity Fair* piece. Meier will join Frank Stella, one of the leading pioneers in abstract art, in a discussion titled "Space, Form and Society" Oct. 5 at 1:30 p.m. in David L. Call Alumni Auditorium.

• Frank Stella, the American painter who moved from minimalist stripes to hot-colored abstractions, has received much attention for his newest work, an assemblage relief featured at the Guggenheim Museum's exhibition on abstraction. Recently, Stella has begun work on full-scale architectural projects, including museums in Germany and The Netherlands. In 1983, he was named the Charles Eliot Norton Professor of Poetry at Harvard.

• Arthur C. Danto, the Columbia University Johnsonian Professor Emeritus of Philosophy and art critic for *The Nation*, has published widely on issues in philosophy and aesthetics. Among his titles are *Mysticism and Morality*, a finalist for the 1972 National Book Award, and *Encounters and Reflections*, winner of the 1992 National Book Critics Circle Prize in Criticism. He will present "Art School and Society" Oct. 5 at 3 p.m. in David L. Call Auditorium.

• Herbert Muschamp, the architecture critic for *The New York Times*, is also the founder of the architecture and design criticism program at the Parsons School of Design. He is the author of numerous books, including *Man About Town: Frank Lloyd Wright in New York City*, *File Under Architecture* and *The Site: Interview by Herbert Muschamp*. He will speak Oct. 5 at 8:45 p.m. in Statler Auditorium.

Several art exhibitions are being held in conjunction with the College of Architecture, Art and Planning's 125th anniversary.

The Herbert F. Johnson Museum of Art is featuring an exhibition of works by three alumni of the college – Susan Rothenberg '67, Louise Lawler '69 and John Ahearn '73 – through Oct. 13. Museum Director Franklin Robinson will present a gallery talk Oct. 4 at 4:30 p.m. in the museum lobby.

"John Hartell: Painting Through the Years" will be exhibited Sept. 17 to Oct. 19 at the Upstairs Gallery, 215 N. Clinton St., in Ithaca. The exhibition features works of the late John Hartell, who was professor of architecture and art at Cornell for more than 35 years.

"125 Years of Achievement," from the Division of Rare and Manuscript Collections at Cornell's Carl A. Kroch Library, runs from Oct. 4 through Jan. 1, 1997, in the atrium of the library. The exhibition documents the history of the college with vintage photographs, original manuscripts, drawings and memorabilia. It is sponsored by Lee S. Jablin '71.

All events are open to the public on a space-available basis. Preferred seating will be available for individuals who register for the weekend activities. For more information, contact Laurie Roberts at the College of Architecture, Art and Planning, 255-1501.

Former architecture dean takes post at Florida International Univ.

By Darryl Geddes

William G. McMinn, who stepped down in June after serving 12 years as dean of Cornell's College of Architecture, Art and Planning, has been named director of the School of Design at Florida International University (FIU) in Miami.

Associate Dean Stanley Bowman has been named acting dean of the college. A member of the Cornell faculty since 1973,

Bowman will serve as dean until a new dean is appointed.

"Dean McMinn's assiduous leadership has strengthened the College of Architecture, Art and Planning and provided it with a solid foundation to meet the challenges of the future," said Provost Don M. Randel. "We wish him well in his new endeavor."

McMinn was instrumental in overseeing the College of Architecture, Art and

Planning's successful \$22 million fundraising campaign, which recently was completed. He also is credited with upgrading educational technology in the college and enhancing the college's academic environment by investing in the development of junior faculty and instituting a study-abroad program in Rome.

McMinn's service to Cornell included membership on the administrative boards of the Herbert F. Johnson

Museum and the Cornell University Council, the Buildings and Properties Committee of the Board of Trustees, and the board of governors of the Cornell Center for the Environment.

He will head FIU's School of Design, which will offer undergraduate programs in architectural studies and interior design and graduate programs in architecture, landscape architecture and environmental and urban systems.

Renowned German historian opens A.D. White Professor-at-Large series

By Jill Goetz

Three renowned speakers—a historian, a psychoanalyst and a geophysicist—will visit the Cornell campus during this month and next as A.D. White Professors-at-Large, giving public lectures and making themselves available to all members of the Cornell community.

George Mosse, Juliet Mitchell and Frank Press are three of Cornell's 16 current professors-at-large, outstanding individuals from the sciences, humanities and arts who, over six-year terms, make periodic visits to Cornell and are considered full members of the faculty. All three of this semester's visitors started their terms in 1993 and will speak at 4:30 p.m. in the Hollis E. Cornell Auditorium of Goldwin Smith Hall.

George Mosse will give a lecture titled "Political Awakenings: Berlin, Exile and the Anti-Fascist Struggle" on Tuesday, Sept. 17. Mosse, the Bascom Emeritus Professor of History at the University of Wisconsin, Madison, and Emeritus Professor of Jewish History at the Hebrew University in Jerusalem, has written more than 15 books, including *Nazism, A Historical and Comparative Analysis of National Socialism; Toward the Final Solution: A History of European Racism; and Nationalism and Sexuality: Respectability and Abnormal Sexuality in Modern Europe*.

Born in Berlin to a Jewish family that published Germany's leading newspaper, Mosse fled the Nazis in 1933, traveling first to France and later to England to study at Cambridge University. He eventually became a U.S. citizen, receiving undergraduate and graduate degrees at Haverford College and Harvard University, respectively, and teaching at the University of Iowa before joining the University of Wisconsin's faculty in 1955. Last year he was the first historian-in-residence at the U.S. Holocaust Memorial Museum in Washington, D.C. In addition to his public lecture at Cornell, Mosse will participate in seminars with students and hold extensive office hours.

David Bathrick, a Cornell professor of German studies and chair of the Department of Theatre, Film and Dance, was a colleague of Mosse's for 17 years at the University of Wisconsin. "George was easily one of the most popular professors on the campus," Bathrick recalled. "He had an enormous following; there were sometimes up to 400 students in his courses. He is a galvanizing, exciting speaker, who not only has a lot of charisma but who challenges his students—even in big lecture classes."

Ground-breaking psychoanalyst and feminist theorist Juliet Mitchell will give two public lectures in September: "Memory and Psychoanalysis" on Thursday, Sept. 19, and "Thou Shalt Not Commit Adultery . . ." on Monday, Sept. 23. And on Thursday, Sept. 26, she will lead a Women's Studies Program "brown-bag" seminar at noon in Cornell's A.D. White House,



George Mosse

George Mosse will give a lecture titled "Political Awakenings: Berlin, Exile and the Anti-Fascist Struggle" on Tuesday, Sept. 17.

Mitchell, who studied as an undergraduate and graduate student at Oxford University, made major contributions to the feminist revolution of the 1970s with her 1974 book *Psychoanalysis and Feminism* and a book on women and politics, *Women's Estate*, as well as a number of collections of her own writings. She also is the editor or co-editor of important collections of works by other noted scholars, including Jacques Lacan and Melanie Klein.

Mitchell is a practicing psychoanalyst in London and a full member of the British Institute of Psychoanalysis. She recently was appointed to a post on the Faculty of Social and Political Studies at Cambridge University to teach gender and psychoanalysis. A well-known speaker and author on both sides of the Atlantic, she has held a Mellon visiting professorship at Yale University and is the first recipient of a professorship-at-large to have been sponsored by the President's Council of Cornell Women.

"Juliet Mitchell has been a crucial figure for the re-examination of psychoanalysis by and for feminist theory," said Mary Jacobus, the John Wendell Anderson Professor of English. "She was the first person to argue that Freud had a great deal to offer feminism; she blazed that trail in the '70s and has continued to work in both feminism and psychoanalysis for the past two decades."

"Her Cornell lectures have been enormously well attended," Jacobus said, "and her visits are always very stimulating occasions." During Mitchell's last visit, Jacobus noted, she collaborated with another psychoanalyst from Europe and participated in a series of lectures and clinical groups.

This semester's third and final professor-at-large is Frank Press, senior fellow with the Carnegie Institution of Washington, D.C., and former president of the National Academy

of Sciences. His lecture, "Out of Chaos: A Better Way to Support Science," will be given on Tuesday, Oct. 21.

Press, who holds a Ph.D. in geophysics from Columbia University and 27 honorary doctorates, has directed the Seismological Laboratory at the California Institute of Technology and chaired the Department of Earth and Planetary Sciences at the Massachusetts Institute of Technology. He was director of the Office of Science and Technology Policy under President Jimmy Carter, one of four U.S. presidents whom he has advised on scientific issues. He three times was named the most influential American scientist in annual surveys conducted by *U.S. News and World Report*.

Press is internationally recognized for his study of the sea floor and of the earth's crust and deep interior and helped bring about the International Geophysical Year, the first worldwide attempt to measure and map various geophysical phenomena. He is co-author of the textbook *Earth*, widely used in American and foreign universities.

The Program for Andrew D. White Professors-at-Large was started in 1965 in honor of Cornell's centennial and is named after Cornell's first president, with whom the idea originated. Concerned that the school's first faculty members, "remote from great cities and centers of thought and action, [might] lose connection with the world at large, save through books," White proposed a system of non-resident professors, chosen for their achievements in diverse disciplines and walks of life, who would visit the university periodically over extended periods.

Chairs of the program are appointed by the university president and hold three-year terms. The most recent chair was Urie Bronfenbrenner, the Jacob Gould Schurman Professor Emeritus of Human Development and Family Studies and of Psychology; on July 1 he handed the baton to Porus D. Olpadwala, associate professor and chair of the Department of City and Regional Planning in Cornell's College of Architecture, Art and Planning, where he received two master's and one doctoral degree.

The Selection Committee of the A.D. White Professors-at-Large Program recently recommended four new appointments, approved by the Board of Trustees. The recommended professors-at-large are Roger Chartier, one of the world's foremost cultural historians, of the Ecole des Hautes Etudes en Sciences Sociales, in France; Richard R. Ernst, a professor of physical chemistry at the Eidgenossische Technische Hochschule, in Switzerland; Jane Goodall, scientific director of the Gombe Wildlife Research Institute in Tanzania and one of the world's leading primatologists (who spoke at Cornell this past April); and Phillip Valentine Tobias, a professor of anatomy and Honorary Professor of Palaeo-anthropology at the University of Witwatersrand in South Africa.

Cornell Sea Grant aided in TWA flight 800 wreckage recovery effort

By Larry Bernard

The tragedy of TWA flight 800, which crashed off Long Island in July, showcased many aspects of a massive recovery effort. Images of hard-helmeted deep-sea divers, stone-faced FBI agents and concerned safety investigators competed with the pained image of relatives' grief plastered across the television news.

But a lot of behind-the-scenes work goes into such a recovery, a critical step for investigators and for protecting the public on the shore. And Cornell's outreach played a key role.

The New York Sea Grant Institute, a joint program of Cornell and the State University of New York, was asked if it could help determine where pieces of the shat-

tered wreckage might wash ashore, based on knowledge of water and wind movement around Long Island.

"I basically provided estimates of the probable location and path of floating material several times a day," said Jay Tanski, Sea Grant coastal processes and facilities specialist based at SUNY-Stony Brook.

TWA flight 800 mysteriously exploded out of the sky off the Long Island coast on the evening of July 17, killing all 230 people aboard.

The next morning, Sea Grant received a call from Dominic Jacangelo, assistant commissioner of the New York State Office of Parks, Recreation and Historic Preservation, asking for help in deciding where to station crews to recover wreckage that they thought would wash up on state park beaches during the busy summer period.

Tanski remembered a U.S. Coast Guard study that he had in his files from the early 1980s that modeled water movement off Long Island. "The results of that model told

us the surface flow in that area could be predicted by looking at local winds and that surface waters would be moving at a velocity equaling about 3 percent of wind speeds, and in generally the same direction."

Using that as a simple, first estimate, he accessed the Internet for data from a buoy in the ocean, maintained by the National Buoy Data Center of the National Oceanic and Atmospheric Administration in the vicinity of the crash site, that gave hourly measurements of wind speed and direction.

Tanski quickly took the information and began plotting a trajectory for the TWA debris.

"What it showed was that from the time the plane went down, the movement would be toward shore, but toward the east, not the west, where they had deployed most of their people," he said.

The Parks Department had staff at some of the big state park beaches, such as Jones Beach—until Tanski advised them otherwise. At the same time, Tanski fed the data

to the SUNY-Stony Brook Waste Management Institute, which used it to independently track the debris path and keep the Beach Information Network (a collection of regional and local agencies involved with managing the beaches) apprised of events.

The result: Tanski's estimates were correct. "They found material on the shore within two hours of when the predictions suggested it would wash up and within the area the model had predicted. This was around the West Hampton area, farther east than the Parks people were originally thinking," he said.

"How much of it was accuracy of our model and how much of it was luck, I don't know," Tanski said. "I think we gave them a better idea of the probability of wreckage coming ashore in a different area. It definitely was not in the state parks area, where they were originally deployed."

He added: "I was somewhat surprised at how close our predictions were to what actually happened."



Tanski

CALENDAR

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with live sets at 8:30, 9:30 and 10:30 p.m. in the Cafe at Anabel Taylor Hall. Admission is free and is open to everyone. Kids are welcome, and refreshments are available. Bound for Glory, North America's longest running live folk concert broadcast, can be heard on WVBR-FM, 93.5 and 105.5.

religion

Sage Chapel

The Rev. Dr. George Pattison, dean of the Chapel, King's College, Cambridge, will give the sermon Sept. 15 at 11 a.m.

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: Sunday, 10 a.m., noon and 5 p.m., Anabel Taylor Auditorium. Daily Masses: Monday-Friday, 12:20 p.m., Anabel Taylor Chapel. Sacrament of Reconciliation: Call the Catholic Office at 255-4228 for an appointment.

Christian Science

Sundays, 10:30 a.m., First Church of Christ Scientist, University Avenue at Cascadilla Park. 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)

Meeting for worship, Sundays, 10:30 a.m., Hector Meeting House, Perry City Road. Child care and rides provided. For more information, call 273-5421.

Jewish

Rosh Hashana, Sept. 13-15. All services in Anabel Taylor Hall, except as noted.

Conservative: Sept. 13, 6:30 p.m., ATH Auditorium; Sept. 14, 10 a.m., auditorium, and 7 p.m., Cafe; Sept. 15, 9 a.m., Cafe.

Reform: Sept. 13, 8:30 p.m., auditorium; Sept. 14, 10 a.m., chapel.

Orthodox: Sept. 13, 6:45 p.m., One World Room; Sept. 14, 9 a.m., One World Room; Mincha, 6:45 p.m., Young Israel; Ma'ariv, 8:05 p.m., One World Room; Sept. 15, 9 a.m., One World Room; Mincha, 6:45 p.m., Young Israel.

Tashlich, Sept. 15, 1:30 p.m. at the creek by Willard Straight Hall.

Free tickets will guarantee seating at Reform and Conservative services on the first evening of Rosh Hashana until 15 minutes before announced service times. They are available in the Hillel Office, G-34 Anabel Taylor Hall.

Korean Church

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

Lutheran

Sundays, 9:30 a.m., and Thursdays, 7 p.m., St. Luke Lutheran Church, Oak Ave. at College Ave.

Muslim

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

Protestant

Protestant Cooperative Ministry: Worship, Sundays, 11 a.m., Anabel Taylor Chapel.

seminars

Advanced Computing Research Institute

TBA, Nicholas Zabar, mechanical & aerospace engineering, Sept. 16, 12:15 p.m., 708 Rhodes Hall.

African Development Institute

"Education and the Colonial Legacy in Francophone Africa," panel discussion with Mohamed Toure, Jean Kouadio and Jarra Jagne, Sept. 12, 12:20 p.m., 153 Uris Hall.

"Post-Colonial Francophone Africa," Francis

Terry McNamara, Association for Diplomatic Studies, Washington, D.C., Sept. 19, 12:20 p.m., 153 Uris Hall.

Agricultural, Resource & Managerial Economics

"Competition for Land: Balancing Private Property Rights With Public Values," Edward Thompson, American Farmland Trust, Sept. 12, 1:05 p.m., 401 Warren Hall.

Animal Science

"Do Cell Cycle Lesions Underlie Attrition of Embryos?" Bruce Currie, animal science, Sept. 17, 12:20 p.m., 348 Morrison Hall.

Applied Mathematics

"Patterns in Eigenvalues," Persi Diaconis, Harvard University, Sept. 13, 3 p.m., 456 Rhodes Hall.

Astronomy & Space Sciences

"Shallow-water Turbulence on the Sphere With Application to Planetary Atmospheres," James Cho, Columbia University, Sept. 12, 4:30 p.m., 105 Space Sciences Building.

"Towards the Distribution of Electron-Density Fluctuations Within the Galaxy," Chris Salter, Arecibo Observatory, NAIC, Sept. 19, 4:30 p.m., 105 Space Sciences.

Biochemistry

"Establishing Polarity in the *C. elegans* Embryo," Ken Kempthues, Cornell, Sept. 13, 4 p.m., large conference room, Biotechnology Building.

Biophysics

"Conformational Energetics and Conformation Dependent Peptide Geometry: Ramachandran Revisited," Andrew Karplus, Cornell, Sept. 18, 4:30 p.m., 700 Clark Hall.

Chemistry

"Studying Chemical Dynamics With Fast Lasers," John Simon, University of California at San Diego, Sept. 12, 11:15 a.m., 119 Baker.

"Methods for the Synthesis of Heterocyclic Natural and Unnatural Products," James Leahy, University of California at Berkeley, Sept. 12, 4:40 p.m., 119 Baker.

Cornell Community Nutrition Program

"Connecting University Dining With the Local Food System: The Hendrix College Example," Gary Valen, managing director, Eating with Conscience Programs, the Humane Society of the United States, Sept. 12, 1:30 p.m., Faculty Commons, Martha Van Rensselaer Hall.

Ecology & Systematics

"Predator-Prey Interactions in Size-Structured Fish Communities," Mark Olsen, natural resources, Sept. 18, 4 p.m., A106 Corson Hall.

Genetics & Development

"Reactive Oxygen Detoxification in Arabidopsis: Scurvy Plants," Robert Last, Boyce Thompson Institute, Sept. 16, 4 p.m., large seminar room, Biotechnology Building.

Latin American Studies

"Latin American Library Resources on the Internet," David Block, Olin Library, Sept. 17, 11 a.m., 106 Olin Library.

Latin American Studies Welcoming Reception, Sept. 19, 4 p.m., G08 Uris Hall.

Manufacturing Enterprise Center/ Cornell Society of Engineers

"Data Communication Networks in Manufacturing & Building Automation," H. Michael Newman, Cornell, Sept. 12, 4:30 p.m., 155 Olin Hall.

"Faster, Better, Cheaper: Silicon Carbide Optical Systems for Space Applications," Dexter Wang, president, and Mark Schwalm, principal engineer, SSG Inc., Sept. 19, 4:30 p.m., 155 Olin Hall.

Materials Science & Engineering

"Molecular Instabilities in Capillary Flow of Polymer Melts: Interfacial Stick-Slip Transition, Wall Slip and Extrudate Distortion," Shi-Qing Wang, Case Western Reserve University, Sept. 12, 4:30 p.m., 140 Bard Hall.

Microbiology

"Invasion of Intestinal Epithelial by *Trichinella spiralis*," Judy Appleton, Baker Institute for Animal Health, Vet College, Sept. 13, 12:15 p.m., Boyce Thompson Institute Auditorium.

Ornithology

"CyberBirding," Rob Scott, Lab of Ornithology, Sept. 16, 7:30 p.m., Fuertes Room, Lab of Ornithology, 159 Sapsucker Woods Road.

Peace Studies Program

"Settling Accounts: Retributive Justice, Violence and Accountability in Postsocialist Europe," John Borneman, anthropology, Sept. 12, 12:15 p.m., G08 Uris Hall.

"Training for Operations Other Than War (OOW): Peacekeeping/Peace Enforcement Operations," Richard Garber, Royal Montreal Regiment, Canadian Army, Sept. 19, 12:15 p.m., G08 Uris Hall.

Pharmacology

"Activators and Effectors for Rho-Like GTPases," Matt Hart, Onyx Pharmaceuticals, Sept. 16, 4:30 p.m., Lecture Hall III, Veterinary Research Tower.

Department of Music opens fall concert series with Joan Tower

The music of Joan Tower, one of this generation's most dynamic and colorful composers, will open the Department of Music's fall 1996 concert series Sept. 14 at 8:15 p.m. in Barnes Hall. The concert is free and open to the public.

Tower will participate in a composer's forum Sept. 13 at 2:15 p.m. in 301 Lincoln Hall.

The Cornell Contemporary Chamber Players will perform Tower's *Trés lent* and *Turning Points*. *Trés lent* (1994) for cello and piano is subtitled "Hommage à Messiaen" and is Tower's most overt tribute to the French composer whose music has been influential in Tower's own works. The composition will be performed by Elizabeth Simkin on cello and Karl Paulnack on piano, both of Ithaca College. *Turning Points* (1995) is a one-movement chamber work for a clarinet and string quintet. The piece will be performed by Simkin on cello, Richard Faria on clarinet, Debra Moree on viola and Ellen Jewett and Margaret Cooper on violin. All are Ithaca College music faculty.

Other works on the program are by Igor Stravinsky, Elliott Carter, Samuel Barber and Laurence Bitensky, an Ithaca College and Cornell graduate and recipient of an American Society of Composers and Publishers Foundation Grant to Young Composers.



Tower

Tower's bold and energetic music has won large and enthusiastic audiences nationwide. Her *Silver Ladders*, written in 1987 for the St. Louis Symphony as part of her three-year residence with that orchestra, won the prestigious Grawemeyer Award for Music Composition in 1990. A recording of *Silver Ladders* and her *Island Prelude* was released in 1990 on Nonesuch Records, featuring the St. Louis Symphony with Leonard Slatkin conducting. The symphony also recorded, on RCA, her *Fanfare for the Uncommon Woman* (No.1).

Currently the Asher Edelman Professor of Music at Bard College, Tower was the pianist for the Da Capo Chamber Players, winner of the 1973 Naumburg Award for Chamber Music.

Tower's appearance at Cornell is underwritten by Meet the Composer, a program supported by the Ann and Gordon Getty Foundation, the Joyce Mertz-Gilmore Foundation and the New York State Council on the Arts.

Plant Biology

"Tomato Pollen Profilin," Douglas Darnowski, graduate student, Sept. 13, 11:15 a.m., 404 Plant Science Building.

Plant Pathology

"The American Phytopathological Society and You," William Fry, plant pathology, Sept. 17, 3:30 p.m., A133 Barton Laboratory, Geneva.

"The Field Trials and Corporate Tribulations of Applied Agricultural Research Within Industry: An American Cyanamid Perspective," Chris Becker, American Cyanamid, Sept. 18, 12:20 p.m., 404 Plant Science Building.

Psychology

TBA, Stephen West, Arizona State University, Sept. 18, 4 p.m., G90 Uris Hall.

Statistics

"Pricing and Hedging Options," Glen Swindle, operations research and industrial engineering, Sept. 18, 3:30 p.m., 404 Plant Science Building.

Textiles & Apparel

"Microstructure Development During Drawing of PET Fibers and Films," David Salem, TRI/Princeton, Sept. 12, 12:20 p.m., 317 Martha Van Rensselaer Hall.

"Personal Protective Evaluation," Catherine Dodgen, ETL Testing, Sept. 19, 12:20 p.m., 317 Martha Van Rensselaer Hall.

Theoretical & Applied Mechanics

"Dynamical Morphology Selection in Materials-Case Studies of Competing Energetics and Kinetics," Zhigang Suo, University of California, Santa Barbara, Sept. 18, 4:30 p.m., 140 Bard Hall.

theater

Department of Theatre, Film & Dance

One of the greatest comedies of the French theater, Moliere's "Tartuffe" will be performed Sept. 19-21 and 26-28 at 8 p.m. and Sept. 29 at 2 p.m. in the Proscenium Theatre of the Center for Theatre Arts. Tickets are \$8 and \$6. Call the box office at 254-ARTS for information and reservations.

miscellany

Campus Club

The Campus Club will hold its Fall Coffee Sept. 12 from 10 a.m. to noon at the North Triphammer Lodge and Conference Center, formerly the Sheraton Inn and Conference Center. All women in the Cornell community are invited. During the coffee, guests may join the club and sign up for its many activity and service groups.

Dialogue Meeting

Dialogue is a multifaceted gathering of lesbian, gay, bisexual and transgender members of the Cornell community, students and friends, to grow in faith and spirituality. It will hold a meeting Sept. 18 from 7 to 9 p.m. at the Cafe in Anabel Taylor Hall.

Hillel

Study the Talmud in English with Rabbi Edwards every Thursday from 9 to 10 a.m. in the Cafe in Anabel Taylor Hall or from 6 to 7 p.m. in the Hillel Lounge, G-34 ATH. Also on Thursdays from 7 to 8 p.m. in G-34 ATH, participate in a class on Jewish stories and ideas. For information, call 255-4227.

Immunization & TB Test Clinics

Immunization and tuberculosis test clinics for new students are scheduled for Mondays, Tuesdays and Fridays in September at the following times at Gannett Health Center: Monday, Sept. 16, from 1:30 to 3:30 p.m.; Tuesday, Sept. 17, from 1:30 to 3:30 p.m.; and Fridays, Sept. 13 and 20, from 9 to 11:30 a.m. All new students are required by New York state law to be immunized against measles, mumps and rubella, and Cornell also requires immunization against tetanus within the past 10 years. International students also must have a TB test within one year prior to admission to Cornell or a chest X-ray within one year of entry if they have a history of positive TB tests. No appointment is needed. For more information, call 255-4364.

Writing Workshop Walk-In Service

Free tutorial instruction in writing:
• 178 Rockefeller Hall: Sunday, 2 to 8 p.m., Monday-Thursday, 3:30 to 5:30 and 7 to 10 p.m.
• RPCC, Conference Room 3: Sunday-Thursday, 8 to 11 p.m.
• 320 Noyes Center: Sunday-Thursday, 8 to 11 p.m.

sports

Men's Cross Country

Sept. 13, at Army

Women's Cross Country

Sept. 13, at Army

Field Hockey

Sept. 14, at Rutgers, 1 p.m.
Sept. 15, at Rider, 2 p.m.

Ltwt. Football

Sept. 14, Alumni, 2 p.m.

Men's Soccer

Sept. 12, Oneonta, 7 p.m.
Sept. 15, at Harvard, 1 p.m.
Sept. 17, at Bucknell, 7 p.m.

Women's Soccer

Sept. 14-15, at UConn/Umbro Classic

Women's Volleyball

Sept. 13-14, Big Red Invitational

CALENDAR

September 12 through September 19

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.

dance

CU Jitterbug Club

The following dance classes take place in the Edwards Room of Anabel Taylor Hall. The cost is \$40 per person, \$70 per couple, \$20 for repeaters. Call Bill Borgida at 273-0126 or e-mail wb10@cornell.edu for more information.

- Basic Jitterbug: Six-week series starting Sept. 17, 8:15 to 9:30 p.m.
- Basic Lindy Hop: Six-week series starting Sept. 18, 7:30 to 8:45 p.m.
- Basic West Coast Swing: Six-week series starting Sept. 17, 7 to 8:15 p.m.

Also being offered is a four-week Advanced Beginners Lindy Hop series starting Sept. 16 from 7 to 8 p.m. at the Elk's Club (corner of State and Geneva streets). The cost is \$25 per person, \$20 for Savoy Lindy Club members.

Israeli Folk Dancing

Thursdays, 8 p.m., Edwards Room, Anabel Taylor Hall.

exhibits

Johnson Museum of Art

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.

- "Three Cornell Artists: John Ahearn, Louise Lawler and Susan Rothenberg," through Oct. 13.
- "New Furniture: Beyond Form and Function," through Oct. 13.
- "Op Art," through Oct. 13.
- "The Prints of Frank Stella," through Oct. 13.
- "Photo-Realism," through Oct. 13.
- "Pop Art," through Dec. 9.
- "The Power of Women in Renaissance and Baroque Prints," through Dec. 15.

"Art for Lunch": Sept. 19, noon to 1 p.m., a tour of the "Pop Art" exhibition with Curatorial Assistant Warren Bunn.

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, kids 12 and

under and seniors), except for Tuesday night Cinema Off-Center at the Center for Theatre Arts (\$2), Thursday early bird matinees (5:15) and Sunday matinees (\$3). Films are held in Willard Straight Theatre except where noted.

Thursday, 9/12

"Antonia's Line" (1995), directed by Marleen Gorris, with Willeke Van Ammelroy, 5:15 p.m.
 "Dead Man" (1996), directed by Jim Jarmusch, with Johnny Depp, Gary Farmer and Robert Mitchum, 7:20 p.m.
 "Mission: Impossible" (1996), directed by Brian De Palma, with Tom Cruise, 10 p.m.

Friday, 9/13

"The World of Jacques Demy" (1955), directed by Agnes Varda, 5:15 p.m., free.
 "Flirting With Disaster" (1996), directed by David Russell, with Ben Stiller and Patricia Arquette, 7:20 p.m., Uris.
 "Lola" (1960), directed by Jacques Demy, with Anouk Aimee and Marc Michel, 7:30 p.m.
 "Dead Man," 9:30 p.m.
 "Mission: Impossible," 9:30 p.m., Uris.
 "Faster, Pussycat! Kill! Kill!" (1966), directed by Russ Meyer, with Tura Satana, midnight, Uris.

Saturday, 9/14

"Lola," 7:30 p.m.

"Faster, Pussycat! Kill! Kill!," 7:40 p.m., Uris.
 "Antonia's Line," 9:30 p.m.
 "Flirting With Disaster," 9:45 p.m., Uris.
 "Mission: Impossible," midnight, Uris.

Sunday, 9/15

In conjunction with its "Pop Art" exhibition, the Johnson Museum will show two films: "Portrait of an Artist: Andy Warhol," 12:30 to 1:50 p.m., and "Portrait of an Artist: Roy Lichtenstein," 2 to 3 p.m., Johnson Museum, free.
 "Antonia's Line," 2:30 p.m.
 "Dead Man," 7:15 p.m.
 "Strike" (1924), directed by Sergei Eisenstein, presented by Pentangle, 7:30 p.m., Uris, free.
 "Mission: Impossible," 9:45 p.m.

Monday, 9/16

"The Crime of Monsieur Lange" (1936), directed by Jean Renoir, with Rene Lefevre and Jules Berry, 7:15 p.m.
 "Flirting With Disaster," 9:15 p.m.

Tuesday, 9/17

"The Leopard" (1963), directed by Luchino Visconti, with Alain Delon and Claudia Cardinale, 7 p.m.
 Margaret Mead Film Festival: Racism/Classicism, 7:30 p.m., CTA Film Forum.
 "Mission: Impossible," 10:30 p.m.



Keith Saunders

The Takács Quartet

Takács Quartet opens the 1996-97 Cornell Concert Series on Sept. 19

The Takács Quartet opens the 1996-97 Cornell Concert Series Sept. 19 at 8:15 p.m. in Statler Auditorium with a program of works by Mozart, Bartok and Schubert.

Tickets are available from the Lincoln Hall Ticket Office, 105 Lincoln Hall, Monday through Friday, 10 a.m. to 2 p.m., or by calling 255-5144. Tickets are \$13-\$22; students \$10.50-\$17.50.

One of the world's pre-eminent exponents of the great Central European quartet tradition, the Takács Quartet (pronounced TAHK-ahsh) follows in the lineage established by the Budapest and Amadeus Quartets. Recent performances have reminded critics of sophisticated interpretations that "illuminated worlds within" and a spirit of ensemble that "in the manner of excellent quartet playing, the whole exceeds the sum of the parts" (*The Washington Post*).

The quartet was formed in 1975 by four students at the Franz Liszt Academy and named after founding first violinist Gabor Takács-Nagy. The quartet's early years were marked by a rapid rise to international prominence, winning five string quartet competitions between 1977 and 1981.

By the late 1980s the quartet, whose repertoire includes the work of Beethoven, Bartok, Brahms and Schubert, was performing every three nights and rehearsing more than five hours a day, six days a week. The

strain took its toll, and in 1994 Takács-Nagy left the group because of poor health; a year later violinist Gabor Ormani died of cancer. Their places have been taken by two Englishmen, violinist Edward Dusinberre and violist Roger Tapping.

The "new" Takács Quartet has not missed a beat, playing to critical acclaim. Reviewing the quartet's recent all-Beethoven performance, *Philadelphia Inquirer* critic Diana Brugwyn wrote: "The musicians of the Takács Quartet were so completely at one in timbre, dynamics and emotional content; I was hard-pressed at times to tell where one instrument ended and another began. The players sounded... as if they had been born an ensemble."

The Cornell Concert Series continues Oct. 17 with a performance by American baritone Thomas Hampson. Other Bailey Hall performances are Yo-Yo Ma, Nov. 7; Garrick Ohlsson, Feb. 8; Academy of St. Martin in the Fields, Feb. 27; Academy of Ancient Music, April 1; and James Galway, April 8. Statler Auditorium performances are the Guarneri and Orion String Quartets, Dec. 6; and Musica Antiqua Köln, March 11.

Subscriptions to the entire Cornell Concert Series are available through Sept. 19. The Cornell Concert Series is on the World Wide Web at <http://www.arts.cornell.edu/Cornell_Concert_Series/>.

Wednesday, 9/18

"Death by Hanging" (1968), directed by Nagisa Oshima, with Yun-Do Yun, Kei Sato and Fumio Watanabe, 7:15 p.m.
 "Goldeneye" (1995), directed by Martin Campbell, with Pierce Brosnan and Sean Bean, 9:40 p.m.

Thursday, 9/19

"The Umbrellas of Cherbourg" (1964), directed by Jacques Demy, with Catherine Deneuve and Nino Castelnuovo, 5:15 p.m.
 "The Silences of the Palace" (1994), directed by Moufida Tlatli, with Amel Hedhili and Hend Sabri, 7:20 p.m.
 "Chungking Express" (1994), directed by Wong Kar-wai, with Brigitte Lin Ching-hsia and Tony Leung, 10 p.m.

lectures

Arts and Sciences, College of

Kops Lecture: "Sex, Lies and the Internet," David Post, co-founder and co-director of the Cyberspace Law Institute and visiting associate professor of law at Georgetown University's Law Center, Sept. 16, 8 p.m., Goldwin Smith D Auditorium.

Chemistry

The 1996-97 Debye Lectures are presented by Richard Lerner of the Scripps Research Institute: "Dominating Reaction Coordinates of Difficult Transformations by Antibody Catalysis: Pi Route Cationic Cyclizations," Sept. 16, 4:40 p.m., 119 Baker Lab, and "Programming Mechanistic Details Into Antibody Catalysts: Reactive Immunization and the Enamine Based Aldol Addition," Sept. 17, 11:15 a.m., 119 Baker Lab.

The Fall 1996 Roesler Lectures are presented by Arndt Simon of the Max-Planck-Institut für Festkörperforschung, Stuttgart, Germany, and will be held in 119 Baker Lab: "Metal-Metal Bonding and Magnetism With Reduced Rare Earth Compounds," Sept. 17, 4:40 p.m.; "A Chemist's View of the Phenomenon of Superconductivity," Sept. 18, 4:40 p.m.; and "Suboxides and Subnitrides in Groups I and II - Metals With Atomic-sized Bubbles and Tunnels," Sept. 19, 11:15 a.m.

European Studies Institute

"Policy Responses to Poverty in the European Union: Old Risks and New," Chiara Saraceno, University of Turin, Sept. 13, 12:15 p.m., 153 Uris Hall.

Johnson Museum

The Rev. Dr. George Pattison, dean of the Chapel, King's College, Cambridge, will give a slide presentation on the imagery of the medieval stained glass of King's College Chapel Sept. 15, 3:30 p.m., Johnson Museum.

Plantations

"How to Be an Accomplice to Murder and Mayhem in the Garden: Ways to Enhance the Benefits of Natural Enemies," Michael Raupp, University of Maryland, Sept. 13, 7:30 p.m., 404 Plant Science Building.

Professors-at-Large

See story on Page 6.

Southeast Asia Program

"Indonesia's Present Through the Prism of Its Recent Past," Barbara Harvey, U.S. Embassy, Jakarta, Sept. 12, 12:15 p.m., Kahin Center, 640 Stewart Ave.

"Characteristics and Growth of the Informal Sector in Indonesia, 1980-1990," Robert Rice, Monash University, Australia, Sept. 19, 12:15 p.m., Kahin Center, 640 Stewart Ave.

music

Department of Music

The Cornell Contemporary Chamber Players will hold its first free concert of the season Sept. 14 at 8:15 p.m. in Barnes Hall. Works to be performed include *Three Pieces for Solo Clarinet* by Igor Stravinsky, Elliot Carter's *Gra* for solo clarinet and two works by Joan Tower, *Tres lent* and *Turning Points*. See story on Page 7.

Cornell Concert Series

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Bound for Glory

Sept. 15: Will Pint and Felicia Dale will perform. The show runs Sunday nights from 8 to 11 p.m.

Continued on page 7