

# CORNELL Chronicle

Volume 26 Number 26 March 23, 1995

## ABRAMS TO SPEAK

Attorney Floyd Abrams will give the 1995 Kops Freedom of the Press Lecture April 4.

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## APPLE A DAY

CU scientists convert apple waste into commercial-grade ethanol.

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## Symposium set to honor Bethe's 60 years at Cornell

By Larry Bernard

Hans A. Bethe, the Nobel laureate physicist whose career at Cornell alone spans 60 years, will be honored with a two-day symposium here that will bring together some of the nation's most illustrious scientists and educators, including Kenneth G. Wilson, Freeman Dyson and McGeorge Bundy.

"Celebrating 60 Years at Cornell With Hans Bethe" is a two-day symposium Friday, March 31, through Saturday, April 1,



Bethe

that will feature a public convocation and panel discussion with leading figures in physics, education and corporate research.

Sessions are free and open to the public. "Hans is an extraordinary individual whose career spans the entire evolution of nuclear physics as we know it," said Kurt Gottfried, former Physics Department chairman who has collaborated with Bethe. "His contributions to physics and to Cornell are outstanding. He is a remarkable combination of a truly great scientist who also has made major contributions in the public service of his nation. There is little question that Hans Bethe is the Dean of Physics in the United States, if not the world."

Bethe, 88, came to Cornell in 1935 and— but for a brief stint during World War II at the Manhattan Project— never left. He won the Nobel Prize in physics in 1967 for his paper, written at Cornell 30 years earlier, that explains how stars shine, and he still publishes research papers at the forefront of astrophysics.

Bethe, who often is cited as being responsible for a nuclear physics program at Cornell, was head of the Theoretical Physics Division for the Manhattan Project at Los Alamos, N.M. He spent many subsequent years as an influential advocate of nuclear disarmament.

Still active, Bethe works at his Newman

Laboratory office on the Ithaca campus daily, when he is not out of town as an invited lecturer. He often is seen having lunch in the faculty dining room, the day's newspaper tucked under his arm.

An exhibit showcasing Bethe's career is on display through April 15 in the Carl A. Kroch Library on campus. Hours are Monday through Friday 9 a.m. to 5 p.m., Saturdays 1 to 5 p.m. The exhibit was co-organized by Silvan S. Schweber, professor of physics and the history of ideas at Brandeis University and Bethe's biographer, who will deliver the symposium's opening lecture on Friday, March 31.

*Continued on page 4*

## A blazing grace



The graceful green and multicolored dragon burns on the Arts Quad March 16 in the annual finale to Dragon Day, which marks the beginning of spring break.

*Peter Morenus/University Photography*

## GTE grants \$1 million for technology

By Larry Bernard

The GTE Foundation has granted Cornell \$1 million to start a major, interdisciplinary program in telecommunications and information technologies, develop new hardware and software and train a new generation of technical leaders for the information revolution now under way.

The first installment of the five-year grant was made Friday, March 17, when Charles R. Lee, GTE chairman and chief executive officer and a member of the Cornell Board of Trustees, met with Cornell President Frank H.T. Rhodes and Engineering Dean John Hopcroft.

"GTE is pleased to provide Cornell with this grant to help develop technology and train the telecommunications workforce of the future," Lee said.

"The telecommunications industry is facing rapid change and is experiencing explosive growth. Wireless and fiber-optic communication networks of the future capable of carrying voice, data and video at faster and faster rates will be required."

Hopcroft said, "We envision a program that will be among the best in the nation, that will make Cornell the institution of choice for students and faculty with interests in the next generation of teleconferencing, information technologies, telemedicine, distance learning and related applications."

GTE's grant will fund research and equipment costs for seven faculty positions, five in the School of Electrical Engineering and two in the Department of Computer Science, supplementing existing expertise in

*Continued on page 2*

## Worried about cholesterol? Watch your chylomicron levels, too

By Blaine P. Friedlander Jr.

In addition to grappling with low-density lipoproteins (LDL) and high-density lipoproteins (HDL) when checking your cholesterol analysis, a Cornell professor points to strong evidence that paying attention to chylomicron levels could help to stave off a possible heart attack or stroke.

Doctors and scientists have long known that heart attacks, strokes and blood clots throughout the body can be initiated by

thrombotic events. The exposure of blood to lipids (fatty compounds) on the surface of arteries loaded with lipid deposits may lead to the formation of a blood clot. What has not been fully understood are the effects of chylomicrons, which are microscopic granules of fat taken in by the body following meals. They are loaded with fatty materials, including cholesterol. The chylomicrons make their way into the bloodstream almost immediately after eating a meal full of fat.

"The effects of dietary fats on serum cho-

lesterol concentrations have been widely investigated for the past 50 years or so," said Donald B. Zilversmit, professor emeritus of nutritional science. "Much less has been learned about the effects of dietary fats on serum triglyceride concentrations." His article, "Atherogenic Nature of Triglycerides, Postprandial Lipidemia, and Triglyceride-Rich Remnant Lipoproteins," appeared in the January 1995 issue of *Clinical Chemistry*.

"My article updates the evidence for a model where triglyceride-rich lipoproteins

contribute to deposits in the arteries and events that cause heart attacks or strokes," he said.

Soon after they enter the bloodstream, the chylomicrons are systematically degraded by enzymes, Zilversmit said. But, the chylomicron remnants remain in the bloodstream long enough to be deposited along arterial walls, much like other cholesterol-containing particles in the blood.

"It seems likely that the remnant par-

*Continued on page 4*

## LETTER

## Price responds

## To the Editor:

My ideas about the evolution of Homo sapiens, seen as an energetic process, were well summarized in the *Chronicle* of March 9. But I take exception to the rejoinder by Professor Orear in last week's *Chronicle*. I am sure that he has a fine knowledge of thermodynamics, but his understanding of biological and social evolution appears to be less profound. And his knowledge of my ideas seems to depend solely on the journalistic account that appeared in these pages — which may be why he has chosen this venue to dispute my conclusions. I have sent him a reprint of the original article, and I hope he will submit his criticisms to a refereed academic journal.

David Price  
College of Engineering

## BRIEF

■ **Seeking art:** Submissions are sought by the Lesbian, Gay, Bisexual Resource Center for a juried exhibition entitled "Portrait: A Portrait of Our Lives," which hopes to depict the many and varied lives of the lesbian, gay, bisexual and transgendered community as they are in 1995. The exhibit is at the Willard Straight Art Gallery the first two weeks in April. For details call the center, G16 Anabel Taylor Hall, 254-4987; or e-mail at [cu\\_lgb-mailbox@cornell.edu](mailto:cu_lgb-mailbox@cornell.edu).

## GTE continued from page 1

the areas of network software, asynchronous transfer mode (ATM), wireless communications, high-speed devices and fault-tolerant computer software.

The grant also will enable Cornell to sponsor two GTE Fellows annually in the Master of Engineering in Telecommunications Program, a one-year program oriented for those students who plan to enter the telecommunications industry. This grant also provides support for student design projects in telecommunications.

GTE Foundation is the philanthropic arm of GTE Corp., the world's fourth-largest publicly owned telecommunications company in the world.

CORNELL  
Chronicle

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Published 40 times a year, Cornell Chronicle is distributed free of charge to Cornell University faculty, students and staff by the University News Service. Mail subscriptions, \$20 for six months; \$38 per year. Make checks payable to Cornell Chronicle and send to Village Green, 840 Hanshaw Road, Ithaca, N.Y. 14850. Telephone (607) 255-4206. E-mail: [cunews@cornell.edu](mailto:cunews@cornell.edu). 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.

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Charles Harrington/University Photography  
From left: Cornell President Frank H.T. Rhodes, Patricia Carry Stewart and Nelson Schaenen Jr. at the trustee dinner held March 16 at the Statler Ballroom. The dinner was in honor of Stewart and Schaenen, who are retiring from the board.

## Trustees continue need-blind admissions policy

By Darryl Geddes

The Cornell Board of Trustees, at its meeting March 17, voted unanimously to continue Cornell's existing need-blind admissions policy for the 1996-97 school year but delayed action on setting tuition for 1995-96 at the university's statutory colleges.

The admissions policy states that Cornell makes admissions decisions without regard to students' or parents' ability to pay educational costs. The policy further states that Cornell will assist students who demonstrate financial need in applying for federal and state grants, employment opportunities, loans and university scholarships and grants.

Provost Malden C. Nesheim said the

7.3 percent increase in Cornell's financial aid budget and "the wonderful response" to the capital campaign for financial aid support enables Cornell to continue its need-blind admissions and need-based financial aid policies.

On the issue of statutory college tuition, Nesheim told trustees that Cornell still was unsure about the level of funding the statutory colleges would receive from New York state. Gov. George Pataki has proposed that funding for colleges in the State University of New York system — which include the College of Human Ecology, the College of Agriculture and Life Sciences, the School of Industrial and Labor Relations and the College of Veterinary Medicine — be cut by

31 percent. The state budget is expected to be adopted on or near April 1.

Nesheim said that the statutory college tuition rates could rise \$500 to \$600 over the preliminary figures discussed with the board in January if the governor's SUNY cutbacks are adopted by state lawmakers.

"All scenarios for the [New York state] budget indicate significant tuition increases for SUNY schools," he said.

An undergraduate New York state resident in one of Cornell's statutory schools currently pays \$7,740 in tuition. In January trustees approved a 5.3 percent tuition increase for Cornell's endowed colleges, setting tuition at \$20,000 for the 1995-96 academic year.

## Tearing up utility contracts won't help for long

This article is adapted from comments that Professor Schuler submitted to the Federal Energy Regulatory Commission.

By Richard E. Schuler

If electric utilities such as the one serving this area, New York State Electric & Gas Corp. (NYSEG), are allowed to abrogate power-purchase contracts with independent producers — as NYSEG has petitioned the Federal Energy Regulatory Commission (FERC) to do — customers will see only short-term savings.

When long-term contracts can be cancelled every time there is excess power-generation capacity, independent suppliers are unlikely to step forward the next time more capacity is needed. This will leave electric utilities as the sole suppliers of power, and consumers will face the continued higher total costs of the utilities' generation.

It is admirable that NYSEG and other utilities seek to reduce the price of electricity for their consumers. It is disingenuous, however — and anti-competitive — to propose to do that solely by eliminating generation purchased from independent power producers while continuing to recover the investment costs of their own, more expensive generation.

The picture looked different when the federal Public Utility Regulatory Policy Act of 1978 and subsequent state laws took effect, requiring public utilities to buy electricity from independents. The nation's power appetite seemed insatiable then, and the guarantee of a market and set price for independent producers' power unleashed the entrepreneurial instincts of the private sector.

A decade later, New York and other states are awash in electricity, due in part to the

emergence of the independent producers. Planned enormous new and expensive utility-generating facilities were cancelled, in part because growth in demand for electricity slowed, but also because the independent producers demonstrated an ability to generate power more cost-effectively than New York's utilities. The independents in New York state have completed new generating facilities with combined operating, maintenance and capital costs of 6 cents per kilowatt hour or less, as compared with the utilities' last experience, a minimum of 8¢/kWh.

## commentary

When the petition from NYSEG quotes costs for their own generation (2.7¢/kWh compared to the 6¢/kWh required in contracts with independents), they fail to include investment recovery in their own costs. In fact, when NYSEG's capital costs are rolled in — as they must eventually be to cover investments — the price of power from a typical nuclear plant (Nine Mile Two in Oswego) is approximately 13.5¢/kWh over the life of the facility. The average lifetime cost of power from a more recently built, coal-fired plant (Kintigh in Somerset) exceeds 8¢/kWh. Who pays the difference between the 2.7¢/kWh short-run cost and the much larger total costs of NYSEG's own power generation? The customers do; it is buried in their power bills.

The utility's petition to FERC may be legal, but it is not fair, either to the independent producers or to NYSEG's customers.

The petition asks that non-regulated generation be treated differently than the utility's generation, and as such, sends strong signals to potential future competitive suppliers of electricity: When unanticipated events, such as power surpluses, occur, the competitive suppliers will be called upon to take the entire hit. When new capacity is needed again, what rational entrepreneur will step up to the plate?

In the final analysis, if utilities were truly motivated by their consumers' interests, they would volunteer to eliminate from their base rates the capital costs of all generating units whose combined capital and operating costs exceed what is currently paid to independent producers. Such a move would reduce rates to consumers more than the current petition before FERC.

I presume the reason why NYSEG hasn't made that offer is because it doesn't want to impose substantial financial losses on its own investors. However, the effect of the petition is to impose large losses on the independent producers' investors. In this light the true effect of the petition, if it is granted, becomes evident: It is to disadvantage the public utility's competitors in generation, and it has far less to do with lowering prices to customers in the long run.

Richard E. Schuler, P.E., Ph.D., is professor of economics and professor of civil and environmental engineering, as well as a Senior Fellow in Cornell's Center for the Environment. He was commissioner and deputy chairman of the New York State Public Service Commission from 1981-1983 when the initial policies and tariffs for independent power producers were established. He was an engineer and manager with an electric utility in Pennsylvania from 1959-1967.

# Mobilize ag research for environment, Dietert tells panel

By Roger Segelken

UTICA – The nation's drinking water would be safer if more publicly funded agricultural research could focus on pollution from farming activities, Cornell Center for the Environment Senior Fellow Rodney R. Dietert told a Congressional panel March 11.

"The same cutting-edge science used to achieve previously undreamed-of agricultural productivity could be mobilized toward a more integrative agriculture, in which agricultural productivity and environmental impact and liability are considered as a unit," Dietert said in testimony to the House of Representatives' Subcommittee on Water Resources and Environment.



Dietert

Dietert, a professor of immunogenetics and director of the Center for the Environment's Institute for Comparative and Environmental Toxicology, was testifying on research needs at a field hearing, called by Subcommittee Chairman Sherwood L. Boehlert (R-23rd, N.Y.). Boehlert is preparing a bill for reauthorization of the federal "clean water act," as the federal Water Pollution Prevention and Control Act is less formally known. Six members of Congress, three Democrats and three Republicans, attended the field hearing in Utica.

The Cornell scientist cited two threats to watersheds from agriculture: concentration of toxic chemicals from both crop and livestock production, as well as the release of infectious agents from livestock, although he noted that wildlife contamination and human activity also can pollute water with harmful microorganisms.

"It is necessary that research, monitoring and watershed planning be sufficiently comprehensive to address both types of health and environmental hazards," Dietert told the congressmen who will vote on the clean water act reauthorization and committee staff members. "Initiatives that fail to incorporate the full range of potential hazards in a comprehensive watershed planning program can provide little confidence to any of the watershed stakeholders."

Dietert spoke for the Cornell environment center, whose Water Resources Institute is performing just the services he prescribed for farms and municipalities in the New York City watershed. Boehlert's district includes part of the Catskill Mountains, a rural region that is part of the New York City watershed.

"To date, most of the effort directed toward agricultural biotechnology has been

aimed at enhancing sheer crop and livestock productivity with little or no concern for environmental sustainability," Dietert noted, suggesting a parallel with another type of industry. "If television manufacturing is now approached using a 'cradle-to-grave' concept, combining production efficiency and environmental liability, then why should agriculture be any different?"

For example, Dietert described a cradle-to-grave technology – thermophilic microbial digestion – that processes farm animal waste into chemical components that can be recycled into new animal feeds, while destroying infectious agents and producing biogas energy for use by the farmer.

"We have the scientific and technological base necessary to meet the serious environmental challenges," Dietert said, "but we must apply the technologies in a fully integrated fashion if we are to be successful."

## Alumni couple honored



Jon Reis Photography

Cornell alumni Allan R. and Frances G. Tessler were honored at a campus reception March 15 as foremost benefactors of Cornell for their endowment of the deanship in the Cornell Law School. Attending the reception were, from left, Russell Osgood, the Allan R. Tessler Dean of the Law School; Allan R. Tessler '58, LL.B. '63; Frances G. Tessler '59; Cornell President Frank H.T. Rhodes; and his wife, Rosa.

## Gensler '58 named 1995 entrepreneur

By Darryl Geddes

M. Arthur Gensler Jr. '58, who in 1965 founded a small design firm that today has become one of the largest international design firms in the world, has been named Cornell's 1995 Entrepreneur of the Year. Gensler's honor is one of the highlights of Cornell's Entrepreneurship and Personal Enterprise (EPE) Celebration '95, which will be held March 30 and 31 on campus.

Gensler, who received a bachelor of arts degree in architecture from Cornell in 1958, will be the guest of honor at a dinner hosted by Cornell President Frank H.T. Rhodes March 30 at 7:30 p.m. in the Carrier Ballroom of the Statler Hotel. Gensler will give a public lecture March 31 at 1:30 p.m. in Alice Statler Auditorium of Statler Hall.

For more than a decade, Gensler and Associates, which has offices in the United States, Europe and the Asian Pacific and employs more than 650 people, consistently has been ranked by professional publications and design peers as America's largest, most respected and best managed design firm.

Gensler has been on the receiving end of numerous honors recognizing his professional contributions. In 1992 he won the Star Award from the Institute of Business Designers. He is a fellow of the American Institute of Architecture and the International Interior Design Association.

Gensler, a member of the Cornell board of trustees and director of the San Francisco Chamber of Commerce, was selected as Entrepreneur of the Year by a panel composed of deans, faculty, students and alumni business representatives.

The EPE Celebration this year also will feature a panel discussion on "The Information Superhighway – An Incredible Journey," at the Moses and Loulu Seltzer Personal Enterprise Forum March 31 from 2:45 to 4:30 p.m. in Statler Auditorium.

Panelists will be:

- Douglas M. Rowan '60, president and chief executive officer of Corbis Corp., provider of the world's largest digital collection of fine imagery of the fine arts, nature, science and history available both on-line and as CD-ROM titles.

- Peter D. Rowan '89, director of international marketing for General Physics, a globally diversified engineering and technical services company with clients in more than 30 countries.

- Roger A. Strauch '78, president and chief executive officer of TCSI Corp., a business software and services provider to the telecommunications, insurance and transportation industries.

Moderator will be Robert W. Felton '61, president and chief executive officer of the Indus Group Inc., an international software products firm focusing on customers in the process industries.

## Floyd Abrams to speak on freedom of the press

By Linda Grace-Kobas

Floyd Abrams, the attorney who defended *The New York Times* in the Pentagon papers case and who successfully argued Court TV's case for televising the O.J. Simpson trial, will present the 1995



Abrams

Daniel W. Kops Freedom of the Press Lecture at Cornell on April 4 in Hollis Cornell Auditorium, Goldwin Smith Hall, at 8 p.m.

His lecture, titled "Our Press and Our Future: American Journalism in the Balance," is free and open to the public.

Abrams has argued more cases before the Supreme Court involving issues relating to freedom of the press than any other lawyer in American history. In addition to *The New York Times*, he has represented ABC, NBC and *Time* magazine in various cases, as well as Nina Totenberg and National

Public Radio in the 1992 investigation by the U.S. Senate into "leaks" surrounding the Clarence Thomas hearings.

He is a partner in the New York law firm of Cahill Gordon & Reindel, chairman of the Communications Committee of the Association of the Bar of the City of New York, and is the William J. Brennan Jr. Visiting Professor of Law and Journalism at the Columbia Graduate School of Journalism.

A 1956 graduate of Cornell, Abrams earned his law degree from Yale. He has received numerous awards in law and journalism. In 1983, the American Bar Association (ABA) gave him its certificate of merit for his article published in the *New York Times Magazine* about the information policies of the Reagan administration. Titled "The New Effort to Control Information," the article was described by the ABA as a "noteworthy contribution to public understanding of the American system of law and justice."

Abrams served as chairman of New York City Mayor Edward Koch's Committee on Appointments and in 1985 chaired the New York State Zenger Commemoration Planning Committee. He also chaired the ABA's Committee on Freedom of Speech and of the Press, and its Committee on Freedom of Expression.

He has published numerous articles in the *Times*, *Harper's* magazine, *Fortune*, the *Yale Law Journal*, the *Harvard Law Review* and other publications.

The Kops Freedom of the Press Fellowship Program was established in 1990 by Daniel W. Kops, a 1939 graduate of Cornell and former editor of *The Cornell Daily Sun*, to bring distinguished speakers to Ithaca annually to discuss issues relating to freedom of the press. Kops is the founding president of Kops-Monohan Communications.

The Kops Fellowship is hosted by the College of Arts and Sciences in cooperation with the American Studies Program.

## New pesticide handbook available

The second edition of the Pesticide Information Notebook published by EXTTOXNET (Extension Toxicology Network) is now available. It provides pesticide-related information in understandable terms.

Pesticide information profiles describe the health and environmental effects of specific pesticides, while toxicology information briefs offer short descriptions on a variety of issues related to pesticides such as carcinogenicity, ecological effects and epidemiology. The notebook includes 139 pesticide information profiles and 17 toxicology briefs.

EXTTOXNET is an ad hoc consortium of university toxicologists, environmental chemists and scientists from other disciplines who participate in public education and university outreach programs that relate to toxicants in the environment. The consortium is organized at a National Coordination Center housed at the University of California at Davis, with three regional centers located at

Cornell, Michigan State University and Oregon State University.

Formed in 1983, the consortium collaborates informally on several projects that deal with pesticides and their residues. In 1986, the U.S. Environmental Protection Agency provided funding to the four EXTTOXNET institutions to develop a series of pesticide profiles and toxicology briefs, making it the consortium's first formally funded project. For the past two years, the U.S. Department of Agriculture National Agricultural Pesticide Impact Assessment Program has provided funding for revision, expansion and further implementation of EXTTOXNET.

Pesticide Information Notebooks are available from: Cornell Resource Center, Attention: Pesticides, 7 Business and Technology Park, Cornell University, Ithaca, NY 14850. Orders of one to 19 books cost \$23 each; orders of 20 or more copies cost \$21 each. Payment (check, money order, purchase order, MasterCard or Visa) must accompany all orders.

### Chylomicron *continued from page 1*

articles will become more atherogenic because of the increased cholesterol content of the remnant particles, when a meal contains much cholesterol," Zilversmit said. Detection of this chylomicron remnant problem relies on the triglyceride analysis of blood. In the fasting state, blood tests for triglycerides, which like cholesterol are a health concern, reveal the presence of VLDL (very low-density lipoproteins). After a fatty meal the same blood test reveals an increase in triglycerides due to the presence of chylomicrons and chylomicron remnants.

Men, for example, show greater chylomicron concentrations in their blood following meals heavy in saturated fats than when men ingest oils, specifically fish oils. In that case, they show a markedly lower concentration of triglycerides, he said.

The latest studies show that circulating triglyceride particles lead to unfavorable changes — they increase the chances of thrombotic events, he said.

Zilversmit reports that in a European study, volunteers substituted polyunsaturated fats for saturated fats in their diets, which resulted in a 43 percent decrease in

fatty particles. Apparently, this is caused from increased chylomicron and remnant clearance on the polyunsaturated fat diet. Of course, saturated fat has long been known to increase cholesterol in other harmful lipoproteins as well.

Doctors commonly ask patients to fast prior to blood tests, Zilversmit said. He believes that from a chemical point of view, doctors should get two blood tests: one test after a standardized meal and one test after fasting. This will enable doctors to get a better picture of fatty remnants in the bloodstream, he said.

Still, the bottom line for concerned consumers: Eat less fat. Zilversmit's report indicates that for people with high concentrations of very low-density lipoproteins (VLDL) or with high amounts of chylomicron remnants, the chances of arterial uptake of cholesterol are greater than in people with low amounts of lipoproteins. Thus, Zilversmit said that people who eat a lot of fats and cholesterol might be at higher risk for coronary heart disease than is indicated by the lipid profile measured in the fasting state.

### Bethe Symposium *continued from page 1*

The symposium begins Friday with technical sessions on current topics in science, including a talk by Bethe on solar neutrinos. It concludes Saturday with a discussion of the

future of basic research, chaired by Cornell President Frank H.T. Rhodes. The symposium is sponsored by the Physics Department, the College of Arts and Sciences and Cornell.

### Celebrating 60 Years at Cornell with Hans Bethe

#### Friday, March 31

1 p.m. Scientific Symposium, Schwartz Auditorium, Rockefeller Hall

- Silvan S. Schweber, Brandeis University, "From  $\alpha$  to  $\alpha$ ,  $\beta$  and  $\gamma$ "
- Kenneth G. Wilson, Ohio State University, "Are There Constituent Quarks in QCD?"
- André LeClair, Cornell, "Just Over 60 Years of Bethe's Ansatz"
- John Bahcall, Institute for Advanced Study, "Recent Results from the Hubble Space Telescope"

#### Saturday, April 1

9:15 a.m. Scientific Symposium, Schwartz Auditorium, Rockefeller Hall

- Gerald Brown, SUNY Stony Brook, "Supernova Explosions, Black Holes and Neutron Stars"
- Hans Bethe, Cornell, "Solar Neutrinos"

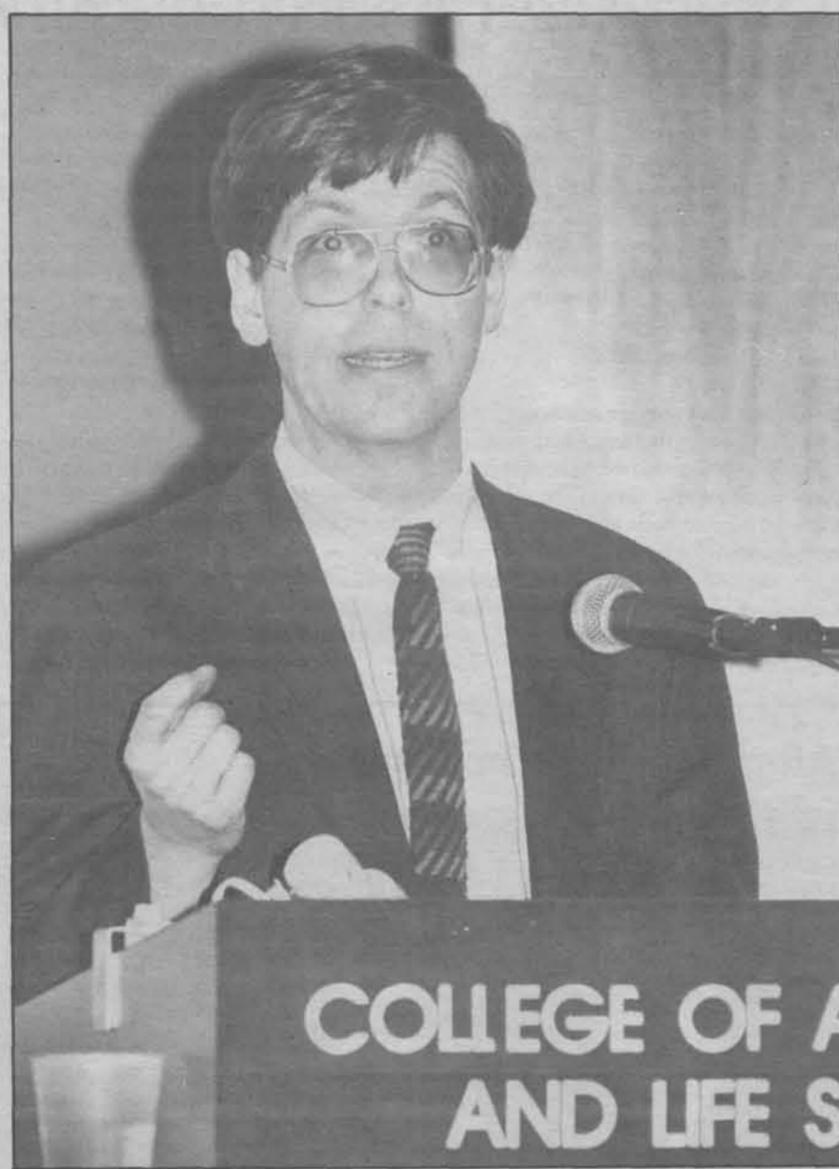
1:30 p.m. University Convocation, Statler Auditorium, Statler Hall

- Video presentation, "I Can Do That!" Hans Bethe's First 60 Years at Cornell"
- Freeman Dyson, Institute for Advanced Study, "Tolstoy and Napoleon"
- McGeorge Bundy, Carnegie Corporation of New York, "Science and Politics and Truth: Notes on an Imperfect Interconnection"

4 p.m. Panel Discussion, Statler Auditorium, Statler Hall

"The Future of Basic Research in the United States"

Chaired by President Frank H.T. Rhodes, with McGeorge Bundy, Freeman Dyson, Richard Garwin, Henry Kendall and Kenneth Wilson



Peter Morenus/University Photography

Michael Levine of the Carnegie Corp. addresses the symposium "Getting Off On the Right Foot: Meeting the Needs of Our Youngest Children" March 10 at Kennedy Auditorium.

## Too many young at grave risk, early childhood experts say

By Susan Lang

More than 12 million American youngsters—infants to 3-year-olds—are victims of a "quiet crisis" that threatens their mental and physical well-being for many years to come and helps perpetuate cycles of poverty, teen pregnancy, violence and crime.

So said experts at a symposium March 10, "Getting Off on the Right Foot: Meeting the Needs of Our Youngest Children."

"And the plight of these youngsters is worsening everyday," added Michael Levine, Ph.D., program officer of the Carnegie Corp., who also addressed the group. "These first three years of life are of critical importance to development. It is the only time such profound changes in development occur so quickly."

Yet, the well-being and future of millions of American youngsters are threatened by poverty, divorce, teen motherhood, single parenthood and substandard childcare, said Moncrieff Cochran, executive director of the Cornell Early Childhood Program at Cornell and professor of human development and family studies. The symposium was cosponsored by the Cornell Early Childhood Program, the Department of Human Development and Family Studies in the College of Human Ecology and the Bronfenbrenner Life Course Center.

Presenters at the symposium offered these sobering trends:

- More than one-quarter of America's youngest children—some 6 million children—live in poverty, and the poverty rate among children keeps increasing.

- The percent of children living with single parents has tripled in the past three years, and single parenthood is linked to higher rates of at-risk behaviors such as sexual activity of teens.

- One-third of American newborns are born to unmarried mothers. One-third of unmarried mothers are teen-agers.

- The minimum wage of \$4.25 an hour generates only \$7,500 a year, less than the poverty rate for a family of three.

"Poverty has enduring effects on children throughout life, yet 26 percent of children under age 6 live in poverty in this country," said J. Lawrence Aber, Ph.D., director of the National Center for Children in Poverty at Columbia University. Even if only white children living in poverty were considered, we'd still have the highest children's poverty rate in the industrialized world, he said.

Urie Bronfenbrenner, the Jacob Gould Schurman Professor Emeritus of Human Development and Family Studies and of Psychology, pointed out that America leads the developed world by wide margins not only in poverty among children but also in the rates for divorce and teen pregnancy.

"The implications for babies born to single teens are even more important than being born in poverty. There is much evidence that shows where you enter the life course has far-reaching consequences as to where you travel for the rest of your life," Bronfenbrenner said.

Babies born to married couples vs. those born to single mothers travel down two different, widely divergent life courses, he said, which are very difficult to overcome.

The symposium is the first of three planned by the Cornell Early Childhood Program. The symposiums focus on developing research directions concerning children from the prenatal stage to 3 years of age, particularly issues related to childcare. On April 11 experts will convene for "Responding to the Crisis," the next symposium in the series. It will be from 1:30 to 4 p.m. in 401 Warren Hall and is open to the public.

# CU scientists find way to convert apple waste to fuel

By Blaine P. Friedlander Jr.

Cornell scientists have found an easy way to convert large amounts of apple waste into commercial-grade ethanol. Although it may not taste great, it is just as filling.

"Right now the process of converting apple pomace into usable material is expensive; the key to the success is in the marketing," said Y.D. Hang, Cornell professor of food science who led the work.

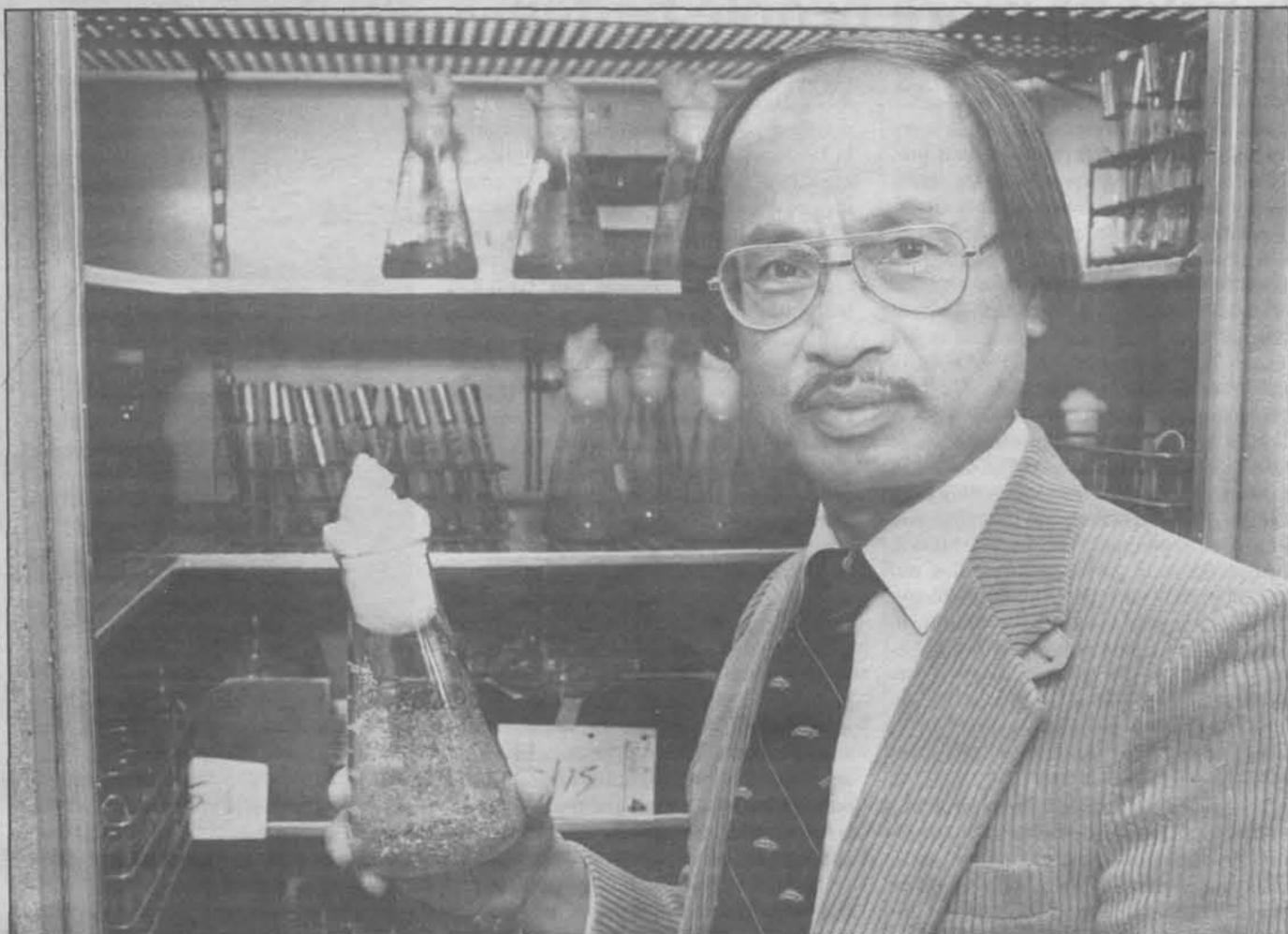
Hang and E.E. Woodams, research support specialist at Cornell, explained how apple pomace could become "A Potential Substrate for Production of Beta-Glucosidase by *Aspergillus Foetidus*," in the international journal *Food Science and Technology* (December 1994).

Like corn, the solid waste from apple juice and other apple products can be converted into ethanol. The starch from corn is converted into glucose, then fermented into ethanol. Making ethanol from apple waste is similar. Rather than starch, however, apples produce cellulose, which can be fermented into ethanol by adding an enzyme.

Apple pomace is the pressed-cake residual left from making commercial grade apple juice or other apple products. Hang estimates that as much as 45 percent of 36 million tons of apples grown in the United States are marked for processing. More than 500 apple processing plants nationwide produce about 1.3 million metric tons of apple pomace each year. Waste disposal fees could exceed \$10 million.

"With stricter environmental regulations, processors are finding ways to use apple pomace," Hang said.

In work funded in part by U.S. Department of Agriculture Hatch grants and New York apple processors' research funds, Hang is working to make the enzyme Beta-glucosidase, which in turn simplifies the production process of making an apple-derived ethanol. What Hang has found is that the mold *Aspergillus foetidus* produces a higher yield of the enzyme, which in turn breaks down the pressed apple-waste cakes and could eventually



Peter Morenus/University Photography

Y.D. Hang, Cornell professor of food science, is holding a flask containing apple pomace. He is working on making an ingredient for gasohol.

make a product like gasohol less expensive to produce.

*Aspergillus foetidus* yielded an extraordinary amount of enzyme when compared with two other aspergillus species. *Aspergillus fumigatus* made only 48 units/kg and *Aspergillus niger* produced only 73 units/kg of pomace. On the other hand, *Aspergillus foetidus* produced 900 units/kg of Beta-glucosidase under the same

conditions — making it far more commercially viable, he said.

With more chemistry than alchemy, apples and corn aren't the only organic matter that will help put a tiger in the tank. Hang reports that ethanol derived as a result of Beta-glucosidase could be found from other fruit wastes like oranges, grapefruit and kiwi.

"Sooner or later, they'll have to liquify

apple pomace. Now that we have an enzyme that breaks it down fast, that waste becomes more valuable," he said.

The concept has been around for more than a decade, but the means of fermenting large amounts of pomace was out of reach until the revelation that the *Aspergillus foetidus* enzyme could accelerate the process that breaks up the pomace, making it easily convertible into fuel.

## Chyba '91, *Time* 'leader,' finds pleasure helping make world safer

By Nancy Rosen

"Call Dr. Carl Sagan collect."

That's what the telegram to Christopher Chyba, Ph.D. '91, then a Marshall Scholar at Cambridge University, read. It was one in a series of memorable events in Chyba's life that includes being a White House Fellow, working on the staff of the National Security Council and most recently, being desig-

### alumni profile

nated as one of the 50 most promising American leaders under age 40 by *Time* magazine.

"When they narrowed their list down to 100 people, they asked if they could send a photographer. At that point I knew there was a good chance, but I didn't know I was actually selected until I picked up a copy of the magazine," Chyba said.

"There's an implausibility to the idea of selecting 50 people in a nation of millions that are representative of the best leaders in America, but nevertheless it's extremely flattering to be compared to people like Maya Lin and Wynton Marsalis," he added.

Chyba, 35, is a senior policy analyst with the White House Office of Science and Technology Policy in the National Security and International Affairs Division. Before that he was a White House Fellow on the staff of the National Security Council. He also studied planetary science at NASA centers in California and Maryland.

"I've been interested in policy since I was an undergraduate at Swarthmore. I did my senior thesis on arms sales to China. As



Christopher Chyba, left, and Ed Bereal in the Northeastern Siberian Arctic, July 1991. Both were members of that summer's U.S.-Soviet exobiology expedition to Northeastern Siberia.

a graduate student at Cornell, I was involved with the American Center for International Leadership which sponsored a United States-Soviet science policy exchange that included a delegation to Chernobyl," Chyba said.

He came to Cornell after studying the philosophy of quantum mechanics at Cambridge on a Marshall Scholarship. He initially contacted Sagan about pursuing graduate study at Cornell, and soon received the telegram in return. He received his Ph.D. in 1991 and worked under Sagan to elucidate the conditions of life's origins on Earth by studying the moon's cratering record, the depressions on the moon's surface caused by colliding comets and asteroids.

"Just about the oldest rocks remaining on

Earth were formed 3.5 billion years ago and contain microfossils. However, Earth's geological record before this time can't be studied because Earth is so active that the slate has been wiped clean. But the moon preserves the record of the history of the inner solar system and shows that the Earth was subject to an enormous bombardment of asteroids and comets ending just before the oldest rocks were formed," Chyba explained.

"Comets and asteroids are rich in the elements carbon and nitrogen as well as water. Meteorites are full of amino acids. It seems likely that a substantial fraction of the biogenic elements needed for life were delivered to the Earth by this heavy bombardment," he said.

In Washington, Chyba's focus has turned to things man-made. He is involved in a number of nuclear non-proliferation or arms control initiatives that are being negotiated.

"With the end of the Cold War, the United States and Russia are reducing their nuclear arsenals down to about 3,000 warheads on each side. Consequently, there is a lot of nuclear material that is freed up. This is in addition to the material at non-military facilities," Chyba said.

Chyba said it would be disastrous for some of this freed uranium and plutonium to find its way into a country or terrorist organization interested in making its own bomb. The lack of accessibility of this material is one of the main barriers preventing countries from developing a nuclear arsenal.

"A major issue coming up in April is the 25th-year review of the nuclear non-proliferation treaty. It's an important component of the group of agreements that are designed to prevent the proliferation of nuclear weapons," he said.

Chyba, who is not married, lives in Washington and walks to work, half an hour each way. He says "spare time isn't all that easy to find these days," but enjoys staying fit, canoe trips in Canada and scuba diving.

He works 11-hour days and wears a pager, incentive enough to return to being a full-time scientist. He wants to return to the origins of life question and in his free time has managed to co-author a major review article on the subject that will be published in May in *Annual Reviews of Earth and Planetary Science*.

But he finds pleasure in his job. "I feel a kind of satisfaction from this job that I didn't feel from being a scientist. I can get up in the morning and think that my time will be going directly into making the world a safer place," he said.

## New method for sizing clothes would fit more people better

By Susan Lang

To help the American apparel industry become more competitive, a Cornell professor is developing a revolutionary sizing system that would more accurately fit the population than the traditional system does.

The new sizing system is organized much like a "3-D crazy quilt" with closely related sizes not necessarily bigger or smaller all over, as in the traditional step-ladder sizing system, but reflecting the differences in body proportions of individuals in a specific population.

"Today's sizes, derived from studies of body types of women in the 1940s, are based on a system of size categories. Within each category, it is assumed that the taller you are, the wider you are," said Susan Ashdown, Cornell assistant professor of textiles and apparel in the College of Human Ecology. "However, there's an enormous variation in body proportions and little correlation between how wide you are and how tall, short-waisted, long-legged or big-busted, for example, you are."

In addition, current sizing systems do not take into account the differences in body types that have resulted from improved nutrition, modern foundation garments, ethnic diversity and aging. As a result, today's sizes fail to properly fit many people, she said.

Using modern statistical methods, however, Ashdown and graduate student Beatrix Paal have developed a statistical model for a sizing system that can be applied to any population and type of garment.

"Rather than using linear correlations of body measurements, we have grouped individuals with closely related measurements into size clusters. This system offers sizes that would fit most of the population," said Paal, who expects to earn a

master's degree in textiles and apparel this spring. Paal, a native of Hungary who majored in economics and mathematics at Budapest University of Economics, is equally skilled in the areas of mathematics and design. She was a doctoral student in economics at Cornell when she took Ashdown's apparel design course as an elective. "I was hooked and switched majors." She brought with her, however, expertise in statistics.

"Working with Beatrix has been wonderful because I had ideas about problems with clothing sizing systems and an understanding of the apparel industry. With Beatrix's mathematical skills, we can carry these ideas much further," said Ashdown, a research apparel designer who focuses on sizing and fit and teaches anthropometrics and apparel.

Using a sample of women's measurements from the U.S. Army, which includes a wide range of female body types including those of office workers, Ashdown and Paal developed the statistical model for the clustered-sizing system for a woman's dress shirt. The current model accommodates 15 variables. Depending on the type of garment and the number of sizes desired, the model can compute an appropriate set of sizes.

In the next phase of the project, if future funding comes through, the Cornell apparel designers hope to produce a set of garments using the new sizing system and fit test them against a set developed using a standard sizing system.

The apparel designers have submitted an initial report to the U.S. Army Natick Research, Development and Engineering Center, which funded their study in the quest for uniforms and protective equipment that fit better and, therefore, protect better.

The sizing system being developed also



Peter Morenus/University Photography  
Susan Ashdown, left, assistant professor of textiles and apparel in the College of Human Ecology, and graduate student Beatrix Paal are developing a revolutionary clothing sizing system.

could be applied to computer-aided design (CAD) to grade patterns automatically. Currently, one size is developed and then, either

manually or with a simple computer technique, the pattern is enlarged or reduced in standard gradations.

## Smallest scanning tunneling microscope made here

By Larry Bernard

SAN JOSE, Calif. — Cornell scientists have made the world's smallest scanning tunneling microscope (STM) — driven by motors 200 microns wide — about the diameter of a human hair.

The new STM signals an era of nanometer or molecular scale patterning, or writing, molecular scale robotics and terabit information storage. The fully integrated device was described March 20 by Yang Xu and Scott Miller, two doctoral students, at a meeting of the American Physical Society in San Jose, Calif.

The breakthrough by Noel C. MacDonald, Cornell professor of electrical engineering, and many of his doctoral students is the result of their work over the last eight years to develop the technology for a wide range of micromotors, microstructures and integrated tips. The process uses silicon micromachining technology developed at Cornell, in work supported by the Advanced Research Projects Agency and the National Science Foundation.

Called a microelectromechanical scanning tunneling microscope (MEM STM), the device has a silicon tip with three actuators that provide the force to move the tip in three dimensions.

A conventional STM is about the size of your thumb and uses piezoelectric motors to scan a tip across the surface. The STM generates an atom image of the surface of the material. The smaller the STM, the faster it can scan a tip.

"As these devices are scaled down, we can make them scan much faster, at the order of a thousand to a million cycles per second. That's not 100 cycles per second like conventional STMs," MacDonald said.

Further, with STMs that small, you could put thousands of them on a chip in a massively parallel fashion.

"You can move things around in a microsecond that previously took min-

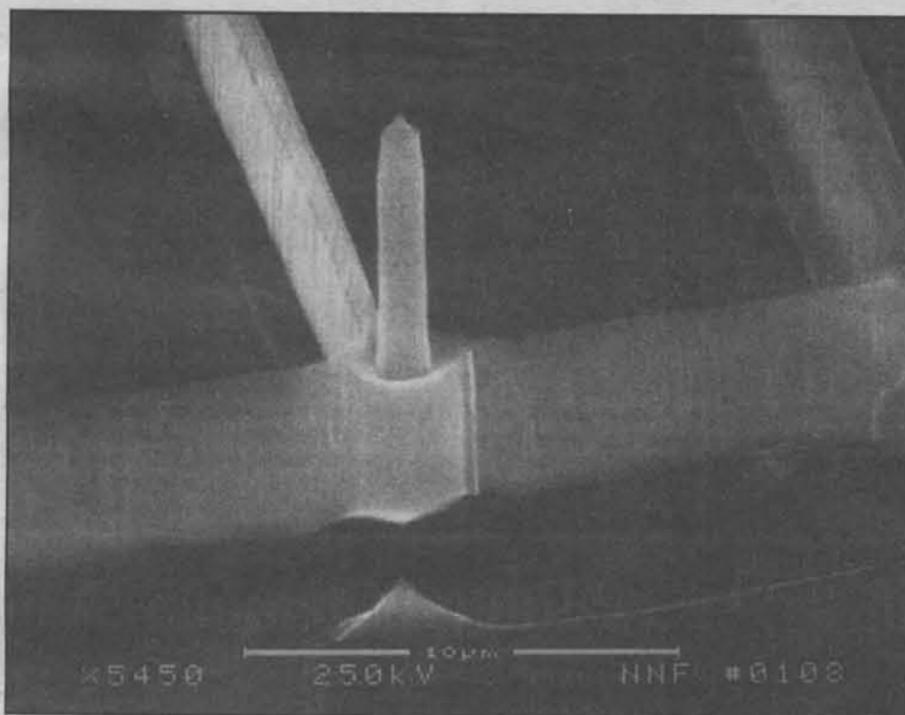


Photo courtesy of Noel C. MacDonald

**A 200-micron-sized motor with a silicon tip is shown here. Made by Noel C. MacDonald, professor of electrical engineering, and his doctoral students, the micromachine can move the tip, itself about 5 microns tall, in six directions. Such a microelectromechanical scanning tunneling microscope, with many tips, could be used for etching a pattern in a chip surface.**

utes. We make them small for arrays and massively parallel operations. These micro-STMs are going to be used for making massively parallel micro-robots for information storage and molecular-scale robotics," MacDonald said.

Such uses may eventually include, for example, the ability to probe DNA and other molecular-scale structures, said MacDonald, former director of Cornell's School of Electrical Engineering, who invented the device using resources at the National Nanofabrication Facility at Cornell.

The Cornell Research Foundation is applying for patents on the technology, and

Cornell has entered into a partnership with TMS Technologies Inc. of Ithaca to license technology in microelectronic processing techniques that is emerging from MacDonald's laboratory.

An array of MEM STMs allows for high-speed patterning on a nanometer scale. Many micro-STMs can be built on a single silicon chip. With thousands of tips, the microsystem could possibly pattern circuits at production speeds.

The inventors envision large arrays of these STMs with each tip storing millions of bits of information in an area no larger than the diameter of a human hair.

## Dale Bauman wins award

Dale E. Bauman, Cornell professor of nutritional biochemistry and the Liberty Hyde Bailey Professor in the Department of Animal Science, has won the Charles A. Black Award from the Council for Agricultural Science and Technology (CAST).

The award is presented annually to a food or agricultural scientist actively engaged in research, who has made significant contributions to science and who communicates the importance of food and agricultural science to the public, policy-makers and news media. They are recognized by their peers as scientists who have made significant contributions in their professional fields.

Bauman was given the award Feb. 26 at a CAST meeting in Alexandria, Va., for his research program in the regulation of nutrient use in lactation, growth and pregnancy.

Bauman, a member of the National Academy of Sciences, is chair of the National Research Council's Board on Agriculture. At Cornell since 1979, he has undergraduate and graduate degrees from Michigan State University and a doctorate from the University of Illinois.

Among Bauman's other honors is the Alexander von Humboldt Award for research considered to be the most significant to U.S. agriculture, and the U.S. Department of Agriculture Superior Service Award.



Bauman

## CALENDAR

from page 8

**Agricultural, Resource & Managerial Economics**

"An Integrated Model of Quebec-Ontario-U.S. Northeast Softwood Lumber Markets," Jean-Thomas Bernard, visiting professor, March 28, 4 p.m., 401 Warren Hall.

**Animal Science**

"Evaluation of CNCPM for Lactating Cows," Bill Stone, graduate student, March 28, 12:20 p.m., 348 Morrison Hall.

**Astronomy & Space Sciences**

"Gravitational Lensing and the Structure of Elliptical Galaxies," Chris Kochanek, Harvard-Smithsonian Center for Astrophysics, March 30, 4:30 p.m., 105 Space Sciences.

**Biophysics**

"Mapping Neuronal Circuits Using Caged Neurotransmitters," Leon Avery, University of Texas, Southwest Medical School, March 29, 4:30 p.m., 700 Clark Hall.

**Boyce Thompson Institute**

Distinguished Lecture in the Life Sciences: "Cellular Mechanisms for Surviving the Extreme," Susan Lindquist, Howard Hughes Medical Institute, University of Chicago, March 29, 3 p.m., Boyce Thompson Auditorium.

**Chemistry**

"Synthesis and Characterization of New Phosphorus Containing Macromolecules," James McGrath, Virginia Polytechnic Institute, March 27, 4:40 p.m., 119 Baker.

"Theoretical Modeling of Biomolecules From Chemistry to Protein Folding," Richard Friesner, Columbia University, March 30, 4:40 p.m., 119 Baker.

**Ecology & Systematics**

"Ecophysiology of Hoatzin, a Foliovore," Fabian Michelangeli, IVIC, Caracas, Venezuela, March 29, 4 p.m., A106 Corson Hall.

**Electrical Engineering**

"Modifying Electron-Photon Scattering Rates in Semiconductor Quantum Wells With Thin AlAs Layers," Cynthia McIntyre, George Mason University, March 28, 4:30 p.m., 219 Phillips Hall.

**European Studies**

"The New States of Central Asia," Edward Hurwitz '52, former U.S. ambassador to Kyrgyzstan, March 27, 12:15 p.m., 153 Uris Hall.

"Adaptation at the Cost of Adaptability: The Transformation of East German Combines Into Western Enclaves," Gernot Grabher, Wissenschaftszentrum Berlin, March 29, 4 p.m., 302 Uris Hall.

**Food Science**

"Biotechnology and Food Science: A Challenge for the Future," Geza Hrazdina, food science, Geneva, March 28, 4:30 p.m., 204 Stocking Hall.

**Fruit & Vegetable Science**

Fruit & Vegetable Science graduate students: Research Review Poster Session, March 30, 4 p.m., 404 Plant Science Building.

**Genetics & Development**

"Light Control of Development Mode Switching in Arabidopsis," Xing Wang Deng, Yale University, March 27, 4 p.m., conference room, Biotechnology Building.

"COX3-mRNA Specific Translational Activation in Mitochondria of Saccharomyces Cerevisiae," Gerlinde Wiesenberger, March 29, 12:20 p.m., small seminar room, Biotechnology Building.

**Geological Sciences**

"Amplifiers of Global Climate Change: Lessons From the Barbados Pleistocene Experiment," Richard Fairbanks, Lamont-Doherty Earth Observatory, March 28, 4:30 p.m., 1120 Snee Hall.

**Hotel Administration**

"Purchase Situation Modeling: The Case of Hotel Selection Criteria for Corporate Travel Departments," Russell Bell and Richard Morey, hotel administration, March 27, 4 p.m., 165 Statler Hall.

**International Nutrition**

"Quantitative and Qualitative Evidence of the Effects of Continued Breastfeeding on the Growth of Toddlers Living in the Slums of Lima, Peru," Grace Marquis, nutritional sciences, March 30, 12:40 p.m., 100 Savage Hall.

**Jugatae**

TBA, James Irvine, St. Johns Wood, London, March 30, 4 p.m., A106 Corson Hall.

**Latin American Studies**

"Causas y Caracter de la Emigracion Cubana Actual," Ernesto Rodriguez, Centro de Estudios Sobre America, Cuba, March 28, 12:15 p.m., 153 Uris Hall.

**Former ambassador, alum will speak**

Edward Hurwitz '52, who served as U.S. ambassador to the Kyrgyz Republic (Kyrgyzstan) from 1992-94, will speak on "The New States of Central Asia" March 27 at 12:15 p.m. in 153 Uris Hall. The lecture, sponsored by the Institute for European Studies, is free and open to the public.

Before declaring its independence in August 1991, Kyrgyzstan had been a constituent republic of the U.S.S.R. It became an independent state when the U.S.S.R. disbanded in December 1991.

A career foreign service officer, Hurwitz served as third secretary (1958-60) and as first secretary (1969-72) of the American Embassy in Moscow, and as consul general

in Leningrad (1986-88) before returning to the United States to direct the State Department's Office of Research and Analysis for the Soviet Union and Eastern Europe (1988-91).

Four years after the Soviet invasion of Afghanistan, Hurwitz was appointed charge d'affaires at the American Embassy in Kabul, Afghanistan, a position he held from 1983 to 1986. The Soviet Union began withdrawing troops from Afghanistan in 1988, following a U.N.-mediated agreement.

Hurwitz, who earned a bachelor's degree from Cornell in 1952, currently serves as a senior consultant in the State Department's Office of the Historian.

**History scholar to lecture on fascism**

Robert Paxton, director of the Institute on Western Europe at Columbia University, will present "Fascisms in Comparative Perspective" March 31 at 4:30 p.m. in Goldwin Smith D of Goldwin Smith Hall. The lecture is free and open to the public.

Paxton, who also serves as the Mellon Professor of Social Sciences at Columbia University, is co-author of *De Gaulle and the United States: A Centennial Reappraisal* (Berg, 1994), *Vichy France and the Jews* (Basic Books, 1981) and *Vichy France: Old*

*Guard and New Order* (Knopf, 1972), a finalist for the National Book Award in history, which has been translated into French, Spanish and Polish.

A fellow of the American Academy of Arts and Letters, Paxton has been a visiting professor at the Ecole des Hautes Etudes en Sciences Sociales in Paris (1983, '89 and '94) and at the Instituto Universitario Europeo in Florence, Italy (1989).

Paxton's visit to Cornell is part of the University Lecture series.

**Materials Science & Engineering**

"Asymmetric Strain Relaxation in InGaAs/GaAs," Karen Kavanagh, University of California at San Diego, March 30, 4:30 p.m., 140 Bard Hall.

**Microbiology**

"Mechanisms of Virus Entry, Uncoating and Nuclear Transport," Ari Helenius, Yale University, March 24, 12:15 p.m., Boyce Thompson Auditorium.

**Natural Resources**

"Alternative Catch-and-Release Regulations for Stream Salmonid Fisheries," Robert Carline, Penn State University, March 30, 3:35 p.m., 304 Fernow Hall.

**Neurobiology & Behavior**

"Analysis of Odorant Recognition in *C. elegans*," Piali Sengupta, University of California at San Francisco, March 28, 12:30 p.m., A106 Corson Hall.

"Probing the Synapse With Drosophila Mutants," David Deitcher, Stanford University Medical Center, March 30, 12:30 p.m., A106 Corson Hall.

**Nuclear Science & Engineering**

"The Cornell Cold Neutron Beam and Its Applications," David Clark, Ward Laboratory, March 29, 4:30 p.m., 118 Ward Laboratory.

**Nutritional Sciences**

"Update on Food and Nutrition Programs and Other Public Policy Issues," Ardyth Gillespie and Christine Olson, nutritional sciences, March 27, 12:20 p.m., N-211 Martha Van Rensselaer Hall.

"Information and Advertising Policy: A Study of Fat and Cholesterol in the United States, 1977-1990," Alan Mathios, consumer economics & housing, March 27, 4 p.m., 100 Savage Hall.

"High Dose Topical Calcipotriol Consistently Reduces Serum Parathyroid Hormone Levels," Giselle Bernstein, March 28, 12:20 p.m., 100 Savage Hall.

"An Application of the Stage Model of Behavior Change to Dietary Fat Reduction," Sara del Real, March 29, 12:20 p.m., 100 Savage Hall.

"Transcriptional Regulation of Nitric Oxide Synthase," Arthur Lin, nutritional sciences, March 29, 3:30 p.m., 200 Savage Hall.

**Ornithology**

"Uninvited Dinner Guests: Techniques for Discouraging Birds," Marvin Pritts, fruit & vegetable science, and Paul Curtis, natural resources, March 27, 7:30 p.m., Fuertes Room, Lab of Ornithology.

**Pharmacology**

"Mechanism and Consequence of Protein Prenylation," Pat Casey, Duke University Medical Center, March 27, 4:30 p.m., G-3 Veterinary Research Tower.

**Plant Breeding & Biometry**

"Using Viral DNA Sequences to Develop Virus Resistant Vegetables and Fruit," Dennis Gonsalves, plant pathology, Geneva, March 28, 12:20 p.m., 135 Emerson Hall.

**Plant Pathology**

"Tobacco Mosaic Virus," Mary Sekiya, plant pathology, March 29, 12:20 p.m., 404 Plant Science Building.

**Science & Technology Studies**

"Pasteur, Laboratory Notebooks and Scientific Fraud," Gerald Geison, Princeton University, March 27, 4:30 p.m., 609 Clark Hall.

**Southeast Asia Program**

"The Debate Over the Saigon Secret Labor Union, 1920-1927," Christoph Giebel, history, March 30, 12:20 p.m., Kahin Center, 640 Stewart Ave.

**Stability, Transition & Turbulence**

"Low Dimensional Models for the Dynamics of Coherent Structures - Boundary Conditions, Tracking and Prospects for Application," Gal Berkooz, BEAM Engineering, March 28, 12:30 p.m., 178 Theory Center.

**Textiles & Apparel**

"Modeling for Suppression of Moisture/Temperature Induced Dimensional Changes in Fibrous Composite Structures," Yiping Qiu, Timberland, March 30, 12:20 p.m., E-405 Martha Van Rensselaer Hall.

**Theoretical & Applied Mechanics**

"Applications of Hypersingular Integrals in Computational Mechanics," G. Paulino, March 29, 4:30 p.m., 206 Thurston.

## theater

**Cornell University Program Board**

The CUPB presents The National Shakespeare Company in "A Midsummer Night's Dream" March 30 at 8 p.m. in Bailey Hall. Tickets are available at the Willard Straight Hall Box Office or at the door, \$5 students, \$6 general. For more information call 255-7132.

## miscellany

**Book Sale**

The Albert R. Mann Library will hold a book sale March 27, 28 and 29 from 9 a.m. to 4 p.m. in the McCay Reading Room on the first floor. Books and journals in all subject areas are being offered; there is a big selection of titles in health, psychology, sociology and general agriculture. Prices are \$1 to \$4 and are reduced each day.

**Field Ornithology**

An eight-week non-credit course for beginning bird-watchers, "Spring Field Ornithology," starts March 29 at the Cornell Laboratory of Ornithology and is open to the public. For more information, call 254-2440.

**Grad School Test Reviews**

The Cornell Campus Store is offering a free

**Vet College Open House set for April 1**

Students in the College of Veterinary Medicine at Cornell will host the school's 29th annual Open House on Saturday, April 1, from 9 a.m. to 4 p.m.

Self-guided tours of the college will take visitors through exhibits and demonstrations with farm animals, pets and exotic animals by the student-veterinarians who are learning to care for them.

"This event is for people who love to learn about animals as much as we do," said Mark Thomas, a Class of '97 student in the state's only veterinary college and co-chair of the open house. "There will be plenty of educational exhibits and fun activities for people of all ages."

While some students are demonstrating the latest veterinary medical techniques, others will provide educational information for people interested in a career in veterinary medicine.

Admission and parking are free for the open house, which is scheduled rain or shine, and there will be give-away prizes. Food services will be available, and radio station WVBR will broadcast live from the college during the open house.

Princeton Review seminar on graduate school admission tests at the store. On Wednesday, March 29, from 3:30 to 5 p.m. "GMAT Test-Taker Smarts" for M.B.A. applicants taking the Graduate Management Admission Test will be offered. For more information, call 255-2934.

**Wellness Program**

The Cornell Wellness Program, CURW and the Hotel School are sponsoring the 6th annual Humor Week, March 27-31:

• March 27, humorous movies on a wide-screen TV in Helen Newman Hall lounge, noon to 1 p.m., popcorn provided.

• March 28, lecture by Sid Hurlbert, noon at Anabel Taylor Auditorium and 4:45 p.m. at Statler Hall Auditorium.

• March 29, more noontime movies in Helen Newman Hall lounge.

• March 30, Exploring the Child Within (fun games and dance) facilitated by Tom Fuchs, SUNY Cortland, Helen Newman Gymnasium, noon to 1 p.m. and 7 to 9 p.m.

• March 31, Cornell Cinema movie night, Woody Allen's "Bullets Over Broadway," 9:45 p.m., Willard Straight Theatre. Discounted movie coupons are available.

For more information, call 255-5133. RSVP would be appreciated.

## sports

Home games are in ALL CAPS.  
Records are as of Monday.

**Men's Baseball (0-2)**

March 23, Cleveland St. at Orlando, noon  
March 24, Portland State at Rollins, noon  
March 29, at Cortland, 3 p.m.

**Men's Hwt. Crew**

March 30, at San Diego Crew Classic

**Men's Lacrosse (1-2)**

March 25, at Yale, 1 p.m.  
March 29, DELAWARE, 3:30 p.m.

**Women's Lacrosse**

March 25, PENNSYLVANIA, noon  
March 26, VERMONT, noon  
March 29, at Bucknell, 3:30 p.m.

**Women's Softball (2-0)**

March 24-25, at Radford Tournament

**Men's Tennis (3-2)**

March 23, at Rollins, 2 p.m.

**Women's Tennis (4-4)**

March 23, at Southern Mississippi, 2 p.m.

**Men's Outdoor Track**

March 25, at Irvine Invitational

**Women's Outdoor Track**

March 25, at Irvine Invitational

# CALENDAR

March 23 through March 30

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

### Theatre Arts

A gala concert, the culmination of the four-day American College Dance Festival, featuring selected new work by student and faculty choreographers, will be presented March 25 at 8 p.m. in the Proscenium Theatre. The admission cost has yet to be determined. Call 254-ARTS for information.

### Cornell Ballroom Dance Club

The Cornell Ballroom Dance Club is sponsoring an April Fools Dance on Saturday, April 1, from 8 p.m. to midnight. A beginning ballroom dance lesson will be offered from 8 to 9 p.m. Recorded music will be provided by CBDC. Admission is free. For more information, contact Sylvia McDonald at 255-7455 or sm31@cornell.edu.

### Cornell International Folkdancers

All events are open to the Cornell community and general public and are free unless otherwise noted. Beginners are welcome; partners are not necessary. Balkan music jams are held on selected Sundays at 6:30 p.m. For information, call 387-6547.

March 26: 6:30 p.m., Armenian and Bulgarian dances taught by Raven; 7:30 p.m., teaching to be scheduled; 8:30 p.m., open dancing and requests, North Room, Willard Straight Hall.

### Cornell Jitterbug Club

A free beginner jitterbug review class will be held March 28, 8 p.m., Edwards Room, Anabel Taylor Hall.

A six-week intermediate jitterbug series begins April 4, 7:15 p.m., 209 N. Aurora St. Cost \$36/\$42. No partner needed. For info, call Bill at 273-0126 or 254-6483.

A five-week series, "Survival Dancing—Couple Dancing From Scratch," will begin April 10, 8 to 9:30 p.m., Anabel Taylor Hall. Cost til April 9 is \$35; \$40 at the door.

### Israeli Folkdancing

Thursdays, 8 to 10 p.m., Edwards Room, Anabel Taylor Hall; instruction and request dancing, beginners welcome; free and open; info: 255-4227.

## 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: 255-6404.

• "Whistler and His Influence: Experiments on

Paper," through April 2. Highlights the museum's collection of more than 90 Whistler prints.

• "Traditional Arts of Southeast Asia," through April 2. This show features ceramics and textiles from private collections and is presented in cooperation with the Southeast Asia Program.

• "A Splendid Diversity: Mannerist Prints from Parmigianino to Goltzius," through April 2. This exhibition includes nearly 30 16th-century prints from the museum's permanent collection.

• "The Machines of Leonardo da Vinci," through April 2. Leonardo's designs come alive in more than 30 reconstructed models of his proposals for a printing press, tanks, flying machines, high-powered gears and a spring-driven automobile.

• "Alfred Stieglitz's Legacy: Photography into Art," through April 9. Drawn from the museum's permanent collection.

• "Between Light and Shadow: The Work of James Turrell and Robert Irwin," through April 9. American artists Irwin and Turrell use light and shadow to create uniquely contemporary art.

• 12 O'Clock Sharp, Thursday Noontime Gallery Talks: March 23, a staff member will discuss "Alfred Stieglitz's Legacy: Photography into Art."

• Sunday Afternoon Artbreaks: "A Walk With Chaucer," with Docent Maryterese Pasquale, will be the topic March 26 at 2 p.m.

### Kroch Library

"Hans Bethe: 60 Years at Cornell," through April 15. An exhibition documenting the life and work of German-born American physicist and Nobel laureate Hans Bethe. The exhibit is located in the Carl A. Kroch Library exhibition gallery.

### Sibley Fine Arts Library

"Screen Printed," through March. Books from the advanced screen printing classes taught by Steve Poleskie.



A scene from "Love After Love," a film by Diane Kurys, playing March 23 at 7:30 p.m. at Cornell Cinema.

## 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), except for Tuesday night Cinema Off-Center (\$2) and Sunday matinees (\$3.50). Films are held in Willard Straight Theatre except where noted.

Cornell Cinema is now accepting applications for co-sponsorship proposals for Fall '95. The proposals most likely to be accepted are ones that meet the needs of the organization's members and appeal to a broader audience, as well as provide some assistance—either publicity, presentations or funding. Call 255-3522 for more information. The deadline is May 1.

### Thursday, 3/23

"Love After Love" (1994), directed by Diane Kurys, with Isabelle Huppert, Bernard Giraudeau and Hippolyte Girardot, 7:30 p.m.

### Friday, 3/24

"Latcho Drom" (1994), directed by Tony Gatliff, 7:15 p.m.

"Being Human" (1994), directed by Bill Forsyth, with Robin Williams and Ana Galiena, 9:30 p.m.

### Saturday, 3/25

"Paul Bowles: The Complete Outsider" (1994), directed by Catherine Warnow, with Paul Bowles, Allen Ginsberg and Ned Rorem, 7:15 p.m.

"The Killing" (1956), directed by Stanley Kubrick, with Sterling Hayden, Coleen Gray and Timothy Carey, 9:30 p.m.

### Sunday, 3/26

"Being Human," 7:30 p.m.

### Monday, 3/27

"Rouge" (1987), directed by Stanley Kwan, Asia Pacific Film Series, 4:30 p.m., Uris, free.

"Dog Day Afternoon" (1975), directed by Sidney Lumet, with Al Pacino and John Cazale, 7 p.m.

"Bullets Over Broadway" (1994), directed by Woody Allen, with Dianne Wiest and John Cusack,

## lectures

### Africana Studies & Research Center

"Africana Studies and the Historiography of Pre-Colonial Africa," Sandra Greene, Africana Studies & Research Center, March 29, noon, Hoyt Fuller Lounge, 310 Triphammer Road.

### Cornell Pet Bird Society

"Parrots: A Price for Popularity? (Their Biology, Conservation and Sustainable Use)," Rosemarie Gnam, U.S. Fish and Wildlife Service, March 30, 7:30 p.m., Lecture Hall 2, Veterinary Teaching Complex.

### Cornell Plantations

"Collecting Wild Apples in Asia," Philip Forsline, Geneva Agricultural Experiment Station, March 30, 7:30 p.m., 404 Plant Science Building.

### Society for the Humanities

"Black on Black: The Emergence of Africa in African-American Fiction 1900-1920," John Gruesser, Kean College of New Jersey, March 27, 4:30 p.m., Guerlac Room, A.D. White House.

"The Fall of the Statues: The Fate of Soviet Era Monuments," Mikhail Ryklin, Russian Academy of Sciences, March 28, 4:30 p.m., Guerlac Room, A.D. White House.

### Women's Studies

"Desire for Children: Does Gender Matter?" Bolaji Fapohunda, population & development and

rural sociology, March 27, 12:20 p.m., 208 W. Sibley Hall.

## music

### Music Department

All events are open to the Cornell Community and the general public and are free unless otherwise noted. For more information call 255-4760.

• March 27, 8:15 p.m., Barnes Hall: Eastman Chorale with conductor William Weinert will perform.

### Bound for Glory

March 26: Albums from the studio, 8-11 p.m. on WVBR-FM, 93.5.

## religion

### Sage Chapel

No service.

### 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

Spring Break Mass Schedule: March 25, 5 p.m.; March 26, 10 a.m. and 5 p.m., Anabel Taylor Hall auditorium.

### Christian Science

Testimony and discussion every Thursday at 7 p.m., Founders Room, Anabel Taylor Hall.

### 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

March 25, Orthodox service, 9:15 a.m., Edwards Room, Anabel Taylor Hall.

March 27: Hillel meeting, 4:45 p.m., G-34 ATH.

March 28: Torah study with Jessica, 9 a.m., Commons Coffeehouse, ATH.

March 29: Talmud study with the rabbi, 9 a.m., Commons Coffeehouse; Interfaith relationship discussion group, 4:30 p.m., G-34 ATH; Basic Judaism, 7 p.m., G-34 ATH.

### Korean Church

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

### Latter-day Saints (Mormon)

Discussions on the Book of Mormon: Wednesdays, 7:30 p.m., 314 Anabel Taylor Hall. All are invited to come and discover the religious writings of ancient American cultures.

Sunday services: Cornell Student Branch, 9 a.m., Ithaca ward, 1 p.m. For 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.

### 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

### Advanced Computing Research Institute

"Crack Detection Using the Schwarz-Christoffel Transformation," Alan Elcrat, Wichita State University, March 27, 12:15 p.m., 708 Theory Center.

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