

# CORNELL Chronicle

Volume 26 Number 1 August 25, 1994

## OF INSECT SEX, SPIDERS AND POTATO SPOTS

Cornell professors report on their findings at the American Chemical Society meeting in Washington, D.C.

3,5

## MILD MALNUTRITION IS MAJOR PROBLEM

Researchers have found that the vast majority of children's malnutrition-related deaths are due to effects of mild-to-moderate, not severe, malnutrition.

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David Lynch-Benjamin/University Photography

**Libe Slope as seen from McGraw Tower on Friday, Aug. 19, when most freshmen were moving into Baker Dorms. Loaded vehicles swamped the campus, carrying all the essentials to survive a first semester at Cornell.**

## President Rhodes greets 3,000 frosh at convocation

By Steven Stern

When Michael Rollins (Agriculture & Life Sciences, Class of '95), co-chair of the 1994 Orientation Steering Committee, addressed new students and their families on Saturday, he perhaps confirmed what a lot of the audience feared:

"Cornell is one big experiment in sleep deprivation, with every student a potential guinea pig," he said.

His jokes about the rigors of life as a Cornell student were tempered by assurances to parents that their children will still care about them, "even if it seems like they've forgotten their phone numbers."

Rollins' combination of levity and encouragement set the tone for the annual President's Convocation, as more than 3,000 new freshmen, plus transfer students, graduate and professional students and their families gathered in what President Frank H.T. Rhodes referred to as the "great humid barn" of Barton Hall.

Committee Co-Chair Allison Halpern (Human Ecology, Class of '95) offered practical advice to new Cornellians, as she detailed the opportunities for extracurricular learning available through student organizations and explained how her own career choices had been shaped by her work-study job.

When President Rhodes took the platform after Halpern's introduction, he noted that he himself could be considered "a graduating senior," as this, his 18th year at Cornell, is his last. "Welcome to this great new morning," began Rhodes, addressing students from a "dazzling variety" of backgrounds. Attempting to describe the diversity and complexity of the university, he sketched a map of its extremes — both public and private, both an Ivy League school and the Land Grant school of New York state and committed both to research and undergraduate education.

New students also got some unexpected insight into the complexities of Ithaca weather as Rhodes interrupted his address to announce the rescheduling of the Open House held at his home, due to thunderstorms predicted for that evening.

Speaking first to parents and family members, Rhodes promised that a Cornell degree is "ample insurance against flipping hamburgers." He also dealt with more serious worries: "Have I prepared my children for this experience? Will they still need me? Will they change?" Mixing assurance with warning, Rhodes answered

**'If you come to Cornell and find it is what you expected, you should transfer out at the end of the year. If you find it is what your parents expected, you should transfer out immediately.'**

— President Rhodes

"yes" to these questions, telling parents that if they are losing their children, they will be gaining lifelong friends.

While noting that "advice from the president is the elevator music of campus life," Rhodes had much to say to the students themselves. "You must reach out," he said, exhorting students to go beyond familiar interests and patterns. "If you come to Cornell and find it is what you expected, you should transfer out at the end of the year. If you find it is what your parents expected, you should transfer out immediately."

Stressing the intellectual diversity of  
*Continued on page 7*

## Working moms share more time with their kids

By Susan Lang

Employed mothers tend to spend significantly more shared time — eating and doing housework and recreational activities — with their children than at-home moms, according to a new Cornell analysis. They spend less than half the time, however, in direct child care than their unemployed counterparts.

"These findings help dispel the notion that the employment of mothers outside the home reduces the time parents spend with their children," said Keith Bryant, a time-use expert and professor of consumer economics and housing at Cornell. "The time  
*Continued on page 2*

## CU professor is appointed to arms control post

By Carole Stone

The Cold War may be over, but the legacy of its nuclear weapons remains.

Tens of thousands of these weapons are earmarked for elimination, but it will take a decade or more to dismantle them. What is the likelihood that terrorists will get their hands on some of these weapons? Or that outlaw nations could import the expertise to extract weapons-grade fuel from reactors to produce nuclear bombs?

These questions cannot be dismissed easily, said Cornell government Professor Lawrence Scheinman, whom President Clinton has appointed as assistant director for non-proliferation and regional arms control in the U.S. Arms Control and Disarmament Agency.

"I cannot say with certainty that no state will use a nuclear weapon against another state," Scheinman said during a recent visit to campus, "but if there is anything to be fearful of it is the threat of terrorist activity such as we have seen from the Iranian-



**'I cannot say with certainty that no state will use a nuclear weapon against another state, but if**

**there is anything to be fearful of it is the threat of terrorist activity.'**

— Lawrence Scheinman

backed Hezbollah."

A former director of Cornell's Peace Studies Program and for the past several years its associate director, Scheinman spent the first half of 1994 in Washington serving as counselor for non-proliferation in the Department of Energy. With his move to ACDA, he is

again concentrating on curtailing new production or expansion of weapons of mass destruction, leaving to others the problem of dealing with weapons and materials that already exist.

Assessing the challenges of the post-Cold War world, Scheinman said the first priority is to ensure indefinite extension of the Nuclear Non-Proliferation Treaty that has been in force since 1970 and whose extension is to be considered by the parties in April and May 1995.

"The U.S. position is unconditional and indefinite extension of the treaty which establishes the normative framework for non-proliferation," Scheinman said. "Without it the nuclear arms race and the proliferation of uncontrolled fissile materials could spin out of control."

Equipped with a law degree from New York University as well as a Ph.D. from the University of Michigan, Scheinman has moved easily between the halls of the university and government. He served as prin-

*Continued on page 4*

## Program shows career options

By Darryl Geddes

Before they open their textbooks or take their first class, M.B.A. students at Cornell's Johnson Graduate School of Management are pondering career options.

Since 95 percent of the graduates land jobs their first year out, the worry is not so much about getting hired as about getting the job they want. Career options for M.B.A. students are varied but all too familiar. There's investment banker, human resource manager, venture capitalist, consultant, analyst and stockbroker.

"We're interested in having our students 'think out of the box' and open themselves up to a wide range of career ideas," said Patricia Matteo, assistant director of the Johnson School's Career Services Office. "Many students don't realize how many career options they have or what their potential is."

Uncovering these career options is one of the goals of Career Trek, a program designed to give M.B.A. students more solid footing in their job search. Career Trek students participate in self-assessment exercises to identify strengths, interests, work values and personality traits. An assessment also is made of each student's decision-making style.

Students then review their classmates' self-assessment surveys, which remain anonymous, and brainstorm suggestions on possible careers. A facilitator records the suggestions on a work sheet.

Many of the ideas advanced are for positions on Wall Street, with investment and brokerage houses, Fortune 500 companies or the government. The most inventive career paths are those that take their lead from a student's list of interests and skills.

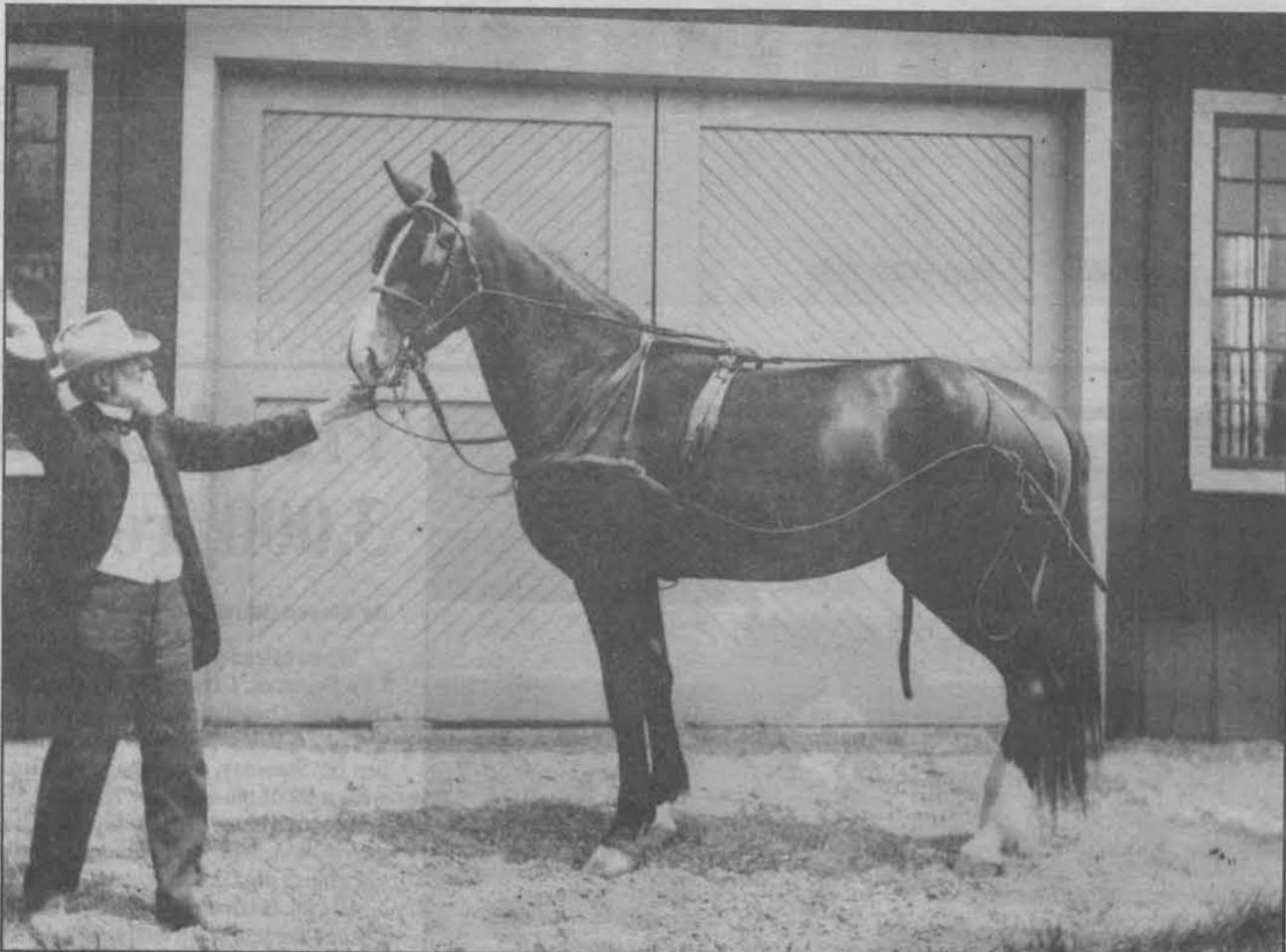
To the student who liked gourmet cooking, mountain biking, international travel and music, career suggestions included culinary magazine editor, record company executive, travel marketer and Club Med executive.

For the classmate who listed sailing as an interest, students suggested careers as a shipping company executive, cruise director and sea captain.

For the student who loved rock and ice climbing and alpine skiing, students suggested jobs as a marketing executive for a ski equipment manufacturer or as a developer of indoor climbing arenas.

After the brainstorming sessions, students retrieve the lists of career possibilities offered by their peers. Several students said they learned of some new ideas, others said the career options presented were ones they were thinking about already.

## Cornell in times past



Smile, please. Isaac P. Roberts waves a handkerchief to catch his subject's attention. The image appears in Roberts' book, *The Horse*, published in 1905. Roberts was the longest-serving dean of the College of Agriculture and Life Sciences, 1874-1903.

Division of Rare and Manuscript Collections/Carl A. Kroch Library

## Shared time *continued from page 1*

that working mothers spend in shared activities with their children goes some way in offsetting the loss in direct child-care time."

The study is one of the first analyses to look at the shared time parents spend in activities with their children, rather than just child care.

The finding that employed mothers spend less time in direct child care than at-home mothers conflicts with the researchers' 1992 findings. Since then, however, Bryant and co-researcher Cathleen Zick of the University of Utah have done a more refined analysis with a better subsample of the original study. That analysis also has found that older, more educated or higher-income parents tend to spend more child-care time than do other parents.

The time-use experts also found that only about half of fathers in the two-child families studied, but two-thirds of mothers, spend any leisure time with their children on a given day. Further, mothers spend significantly more time sharing housework and family-care chores with their daughters than with their sons, while fathers spend more time doing these activities with sons.

Since these findings were drawn from data gathered in the late 1970s, the most recent available, Bryant and Zick cannot say whether shared-time patterns have changed since then. Bryant noted, however, that by the time the data were collected, the "women's revolution" was already 15 years old, yet parents still were exhibiting traditional sex typing, the teaching of sex roles.

"With this kind of continued sex typing, there may be less change in the sexual division of labor in household chores in the next generation of spouses than some might expect," said Bryant, who teaches a course on the economic organization of the household.

Bryant and Zick analyzed data on shared time from 579 two-parent, two-child families from Louisiana, New York, Wisconsin and Utah, collected by a USDA-funded research project (Eleven-State Time-Use Survey) in 1977-78. They presented their research at the 1993 conference of the Population Association of America in Cincinnati. Their updated study on primary child care — bathing, feeding, dressing and driving a child around while doing nothing else — which was based on the 1975 National

Time-Use in Economic and Social Accounts and a re-interview of the sample in 1981 — will be published in a forthcoming book of proceedings from the 1992 conference, *Household Time Use*.

Shared time is defined as time spent together in the same activity, such as sharing chores, meals or recreational activities. "This time may be viewed by the parent as an investment in the child's mental, physical, social and problem-solving skills, and in values such as fair play and sex appropriateness of activities," Bryant said.

Other significant findings from the shared-time study include:

- Husbands of employed mothers spend more leisure and shared time with their children than husbands of unemployed wives.
- The higher the family income, the more time both parents spend sharing meals and housework with children (holding other variables constant). The higher the family income, the more time mothers tend to spend in recreational activities with their children.
- Of the 62 percent of mothers who spend any leisure time with children on a given day, the average amount of shared leisure time was 75 minutes per day. Of the 50 percent of

fathers who spent any time in recreational activities with their children, the average amount of time was 72 minutes per day.

Other significant findings from the updated primary child-care time study include:

- At-home moms tended to spend more than twice as much time in direct child care as employed mothers in 1975 and 1981.
  - In 1981, married mothers spent an average of 90 minutes caring for children; married fathers spent 43 minutes. Per child, mothers spent 60 minutes a day caring for each child; fathers spent 20 minutes per child per day.
  - Historically, married women in 1981 spent five minutes more per day in total child care than their counterparts in 1924-31.
  - Husbands of employed wives increased how much time they spent caring for children between 1975 and 1981; the time that husbands of unemployed wives spent caring for children did not change significantly.
- Next, the researchers will analyze "secondary" time in child care — the time parents spend caring for children while engaged in another activity at the same time, such as making dinner or doing housework while watching children.

## 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. 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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## BRIEFS

■ **English teachers:** Interested in helping people from foreign countries associated with the Cornell community? The Cornell Campus Club has a program for teaching English as a second language to persons temporarily in Ithaca. The classes require a two-hour commitment per week, plus preparation. For more information contact Ann Marie Dullea at 277-2488 or Joan McMinn at 277-0013.

■ **English classes:** Registration for free English classes sponsored by the Cornell Campus Club will take place on Thursday, Sept. 1, from 7:30 to 9 p.m. in the One World Room, Anabel Taylor Hall. There is a \$10 registration fee. Classes begin Sept. 6. For further information call Ann Marie Dullea at 277-2488 or Joan McMinn at 277-0013.

■ **Campus town meeting:** Congressman Maurice Hinchey will hold a campus town meeting Monday, Aug. 29, at 4:30 p.m. at the Biotechnology Building. He will be reporting to members of the campus community on health-care reform, the crime bill and other legislative matters. Refreshments will be served.

■ **Chimes resume:** The Cornell Chimes-masters have resumed their regular schedule. Concerts begin weekdays at 7:45 a.m., 1:10 p.m. and 6 p.m.; Saturdays at 10:40 a.m., noon and 5 p.m.; and Sundays at 10:40 a.m., noon and 6 p.m. McGraw Tower opens to visitors five to 10 minutes before each concert and is closed at concerts' end. Tours of McGraw Tower can be arranged by request. Call 255-5350 for information.

# Lacy named director of Cornell Cooperative Extension

By William Steele

William B. Lacy, assistant dean for research and assistant director of the Experiment Station for the College of Agriculture at Pennsylvania State University, has been named the new director of Cornell Cooperative Extension effective Sept. 1.

Lacy replaces Lucinda Noble, who retired in June after 16 years as director, in overseeing a system of some 1,600 extension workers in urban and rural areas throughout New York whose job is to distribute practical knowledge developed in the College of Agriculture and Life Sciences and College of Human Ecology to the people of the state.

Lacy also will serve as associate dean in both colleges and has the rank of professor



Lacy

of rural sociology.

"As a sociologist in a college of agricultural sciences at Penn State, I think I've stimulated better working relationships between social sciences and biological sciences," Lacy said. "One of the advantages I'll have at Cornell that I didn't have at Penn State is the association with both agriculture and human ecology. This will make it easier to collaborate on programs that would benefit from having these people with their diverse expertise work together."

Lacy has been interested in finding ways to make agriculture more sustainable "economically, environmentally and socially," he said. "Agriculture for the future involves not only biology issues, but how agricultural production practices may affect community goals and environmental quality."

There will be no immediate changes under his leadership, Lacy said. "The organization is doing well. That's one of the attractions to me in joining it," he said. "I believe that change should come from within the organization. But we each bring our own

personal style and set of ideas, and I'll be bringing my perspective to bear on the group discussion and decision process."

Lacy brings to his new job some 25 years of experience in studying and overseeing the relationship between research and extension. After graduating from Cornell's School of Industrial and Labor Relations in 1964, he obtained an M.A. in higher education administration at Colgate and a Ph.D. in sociology at the University of Michigan in 1975.

His research interest in the sociology of science eventually led to studies of the relationship between agricultural scientists and extension agents and their clients, and the effect of their organizations on their activities. His research also has included studies of agricultural research and extension systems in developing countries. His work in Sudan has been applied to U.S. Agency for International Development projects throughout the world. In Brazil and in India he served as a consultant assessing the impacts of agricultural universities on development.

In recent years he has focused on the

growing importance of biotechnology in agricultural research and the sociological issues surrounding efforts to preserve biodiversity and genetic resources.

His lifetime of research is summed up in six books he has co-authored or co-edited: *Science, Agriculture and the Politics of Research* (1983), *Food Security in the United States* (1984), *The Agricultural Scientific Enterprise: A System in Transition* (1986), *Biotechnology and Agricultural Cooperatives* (1988), *Plants, Power and Profit: Social, Economic and Ethical Consequences of the New Biotechnologies* (1991) and *Biodiversity/Cultural Diversity: The Plant Germplasm Controversy in Cultural Context* (in press).

Lacy was born in Wellsville, N.Y., and lived in Rochester and the New York City suburbs. His wife, Laura Robinson Lacy, is a 1965 Cornell graduate.

"I have fond memories of Cornell, but I don't live in the past. I'm returning to new responsibilities and challenges. I feel very excited about the possibilities," Lacy said.

## Chemicals rule as regulators of insect sex, prof says at ACS meeting

By Linda McCandless

WASHINGTON, D.C. — Chemical signals are the most common means of communication among insects and key to their survival, and manipulation of insect chemistry can be an effective behavioral tool, a Cornell expert said Wednesday.

As used for finding mates, chemical signals are fundamental to the successful evolution of each species. Chemicals affect where insects live, when they fly, if they mate and what they eat, said Wendell L. Roelofs, the Liberty Hyde Bailey Professor of Insect Biochemistry at Cornell and chairman of the entomology department at the Cornell Agricultural Experiment Station in Geneva.

As the 1994 recipient of the Agricultural Research Service Sterling B. Hendricks Memorial Lectureship, Roelofs delivered a talk Wednesday entitled "The Chemistry of



Wendell L. Roelofs, the Liberty Hyde Bailey Professor of Insect Biochemistry at Cornell, inspects a monitoring trap baited with sex pheromone from the Oriental beetle, a turf and ornamental pest.

**'The beauty of the pheromones that have evolved as the communication system for mating in insects is their species specificity.'**

— Wendell Roelofs

Sex Pheromone Communication Systems in Insects" at the national meeting of the American Chemical Society here.

"The beauty of the pheromones that have evolved as the communication system for mating in insects is their species specificity," Roelofs said. "The release of several hundred molecules by a single female is enough to attract conspecific males from a very great distance. Our understanding of the chemistry involved and our ability to synthesize pheromone chemicals is the basis for new strategies in insect control."

Manipulation of the chemical communication system female insects use to attract mates involves an understanding of overt chemical signals carried over great distances in "pheromone plumes" to olfactory response systems. Roelofs' research efforts at the Agricultural Experiment Station have focused on chemical analyses of the pheromone components. "The driving force and financial backing for much of the research is due to the potential for use of synthetic pheromone chemicals in pest control programs," he said.

Manipulation also involves understanding the complex chemical processes in female emitters and male receivers. In the receivers, the essential components in the complex information gathering and processing system involve the insects' antennae and central nervous system. Insects decode a phenomenal amount of "chemical noise," including com-

peting pheromone signals from other insects, as well as information about temperature, light and other environmental factors including host plant presence.

"Chemical signals can either act as behavioral 'antagonists' or 'activators,'" Roelofs said. "Specific olfactory cells are so sensitive they can respond to a single compound. Chemical reactions with antennal receptors initiate a cascade of secondary messenger signals resulting in electrical impulses to the central nervous system that results in behavioral responses within milliseconds."

In his lecture, Roelofs reported that chemical signals have been identified for more than 1,600 insect species from 90 families in nine orders of insects. Recent work includes the analysis of the abdomens of 15,000 brown-banded cockroaches and the successful identification of a phero-

mone attractant currently in the patent process. Once the patent is approved, Roelofs said he hoped it could be commercialized for cockroach monitoring traps in hospitals, schools and apartment buildings.

"Worldwide, the biggest cockroach pest is the German cockroach," said Roelofs, whose research group currently is exploring the pheromone of that insect. "Its pheromone chemistry has eluded chemists for 40 years."

Roelofs also lectured on the technical complexities of running a research program that depends on an insect-rearing system designed to provide 1,000 insects a week. Hundreds of live insects are used in behavioral studies conducted in flight tunnels that simulate wind speed, ground movement and the pheromone "plume." Microsurgery on hundreds of other insects provides the delicate parts like brains, abdominal glands and

nerve ganglia needed for chemical analysis.

"In order to identify the hormone and its gene used to control pheromone biosynthesis, for instance, we may have to extract 5,000 brains," Roelofs said. "It takes steady hands and years of patient accumulation of data."

Future research in insect control and monitoring involves subtle manipulation of pheromones and hormones in the insects' emitters and receivers. "One research phase might be to identify the genes that encode hormones involved in regulating some of the chemical processes in the emitter or receiver and use them to interfere with insects' development and metabolism," Roelofs explained.

A collaborative project has been initiated with researchers at the Boyce Thompson Institute for Plant Research at Cornell, to use baculoviruses as a delivery system for the insect-specific genes.

"The insect genes should be safer to use

**'The driving force and financial backing for much of the research is due to the potential for use of synthetic pheromone chemicals in pest control programs.'**

— Wendell Roelofs

in the viruses than genes for general toxins because they are extremely insect specific. Also, the baculovirus is bioengineered so that it is incapable of producing a protective coating and thus cannot survive in the field for more than a year," he said.

Roelofs said he employs a strong sense of humor and fun to stimulate his research group of 13 at the Experiment Station. As one who believes implicitly that science can be entertaining, he got a sympathetic laugh from a crowd of biochemists when he joked that most people in Geneva are sorry when they ask what his "Delta 11" car license plate means.

"After I get done telling them about the unique delta 11 desaturase that is only found in nature in moth pheromone glands and is used to generate a double bond in the pheromone compound of many moth species, they shake their heads and walk away."

Roelofs was among the first to successfully apply the chemistry of insect pheromones to the control of agricultural pests. His identification and synthesis of a series of sex pheromones from the Oriental fruit moth, the redbanded leafroller and the European corn borer, together with the then novel approach of using electroantennogram (EAG) bioassays, led to the development of the biocontrol of insects as an alternative to pesticides. He received the prestigious Wolf Prize for Agriculture in 1982.

## Associate Dean Conneman to resume teaching

By William Steele

After more than 13 years as associate dean for academic programs for the College of Agriculture and Life Sciences, George J. Conneman will step down from the administrative post Sept. 1 to return to teaching and research.

"It's not that I don't enjoy it," Conneman said, "but 13-1/2 years is a long time, and we've always played here as a team. With the dean planning to step down next year, it seemed this would be a good time to resume my teaching and department responsibilities."

Conneman, a professor of agricultural, managerial and resource economics, has been a member of the Cornell staff since 1955, when he started as a research assistant. He became an assistant professor in 1959, going on to teach courses in farm business management and rural real estate appraisal. In 1975 he received the Professor of Merit award given by the agricultural honor society Ho-Nun-De-Kah.

In 1981 he was named Director of Instruction for the college by Dean David L. Call. The post was later redesignated as associate dean for academic programs.

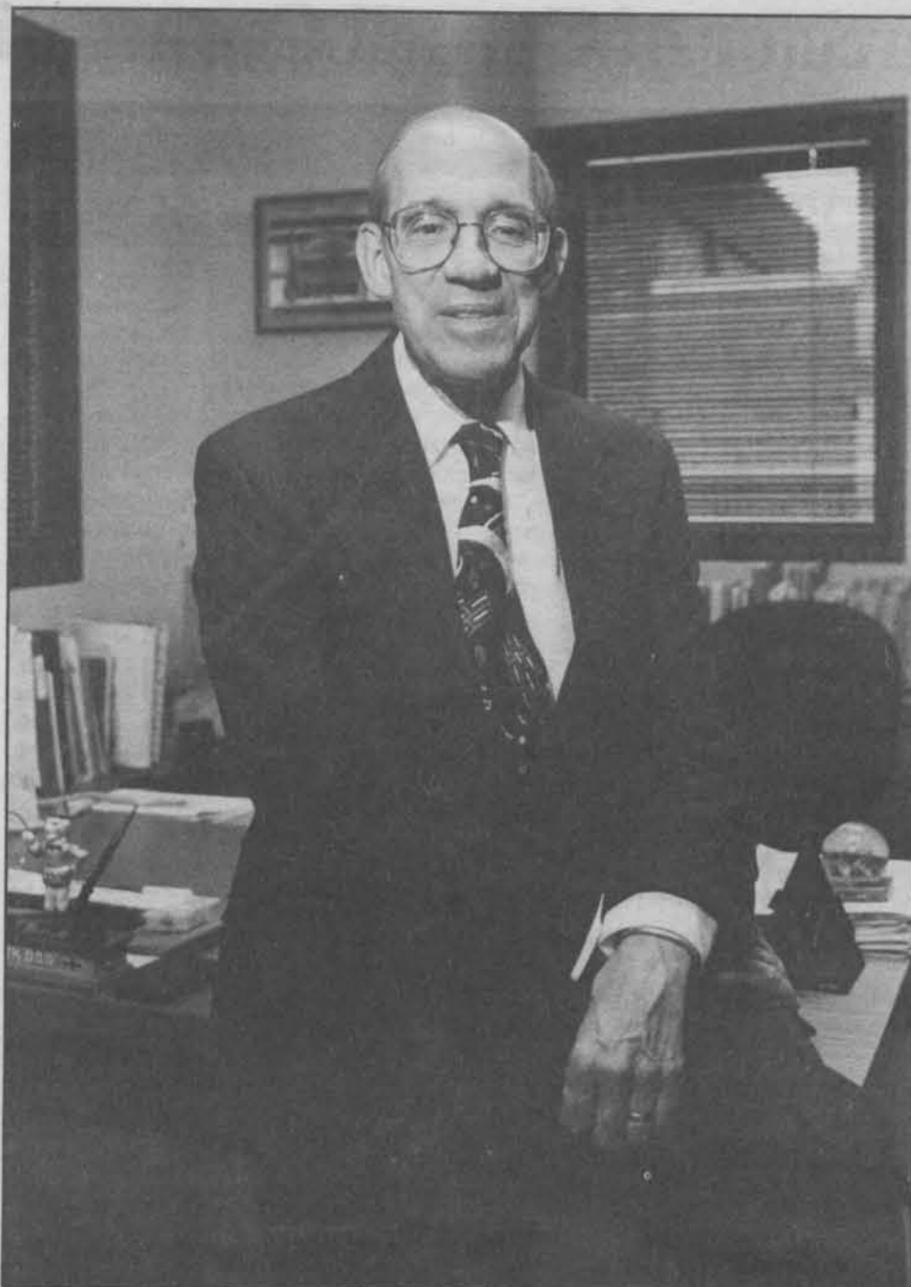
"I feel both I and the college have been very fortunate to have George Conneman as director of academic programs," Call said. "I chose him because he's such a strong teacher and adviser and enjoys working with students, and that's essential for the job."

Conneman carried his dedication to teaching into the post, establishing weeklong workshops in which faculty members study "the art and science of college teaching," as well as training sessions for teaching assistants. He also worked to improve the advising system for undergraduates.

"I think that one of the most important things I've accomplished, along with the faculty, is that we have changed the mind set to one in which teaching and advising are more important," Conneman said.

Conneman continued to teach two courses during his tenure as associate dean and carried an advising load of 20 to 25 students.

Throughout his career Conneman also has been active in agricultural extension, focus-



Charles Harrington/University Photography  
George Conneman, associate dean for academic programs for the College of Agriculture and Life Sciences, is stepping down to return to teaching and research.

ing on educating farmers about the business side of farming and publishing economic forecasts for New York agriculture. He has taught regularly in the Banker's School of Agriculture, recently renamed the Northeast Lending School, a short course to acquaint lenders with the special needs of farmers.

One of Conneman's last official acts was

to run orientation for new students and to lead a special hourlong orientation session for parents which he initiated 13 years ago. He will take a one-semester leave and resume teaching in the spring.

Conneman earned his undergraduate and master's degrees from Cornell and his doctorate from Pennsylvania State University.

## Laquatra gets award for help to Poland

By Susan Lang

To help Poland relieve its severe housing shortage, Cornell housing specialist Joseph Laquatra spent last semester traveling the length and width of Poland presenting seminars on how to build homes more quickly and efficiently.

For his efforts as the first American-Polish Home Builders Institute (APHBI) Scholar-In-Residence, Laquatra received the "Hands That Work" award from the Home Builders Institute (HBI) on July 7. HBI is the educational arm of the National Association of Home Builders (NAHB), and is based in Washington, D.C.

Currently, Polish builders take an average of three years to build single-family dwellings, primarily because they use traditional construction methods of brick walls and precast concrete panelized floors instead of light-frame construction.

"Although the Polish economy has been improving, there is still a huge pent-up demand for 1.5 million more housing units," said Laquatra, Cornell associate professor of design and environmental analysis in the College of Human Ecology. "That means that 420,000 units should be built each year, yet currently only 135,000 are under way."

"Polish builders perceive their building practices to be costly and obsolete, but they feel they must be certain that Western methods will be acceptable to Polish home buyers before they adopt them."

In presenting the HBI award to Laquatra, Philip Polivchak, president and CEO of the Home Builders Institute, said, "Civilization offers no higher role than that of a teacher who deeply commits himself to the task of maintaining and passing on to future generations the skills of the present. HBI is deeply appreciative of the boost you gave our Poland project."

Polivchak and Laquatra will present a paper on the APHBI project, specifically on how housing construction in Poland is adapting to a changing economy, at the Sixth International Research Conference on Housing in Beijing, China, Sept. 21 to 24.

## Scheinman *continued from page 1*

cial deputy to the deputy undersecretary of state for security assistance, science and technology in the Carter administration and was adviser for long-range planning to the director-general of the International Atomic Energy Agency from 1986 to 1988 and again in 1991 in the wake of the Gulf War. The IAEA, a United Nations affiliate in Vienna, verifies compliance with the terms of the Nuclear Non-proliferation Treaty.

"My new position is the epitome of what I can do in this area," Scheinman said. His appointment, which was confirmed by the Senate in July, gives him the political authority that comes from speaking "on behalf of the president" in international arenas.

"This is a unique and exciting opportunity for me to serve at the assistant secretary level in my chosen field of academic work," Scheinman said.

In recent months, ACDA has focused increasingly on the Korean peninsula — one of three sensitive regions, along with South Asia and the Middle East, which comes within Scheinman's domain in ACDA's scheme of things.

Even though a high-ranking defector said in July that the North Koreans have five nuclear devices already, Scheinman remains skeptical, leaning on some triple-think worthy of a Cold War spy novel. He speculates that "it is plausible that the North does not have a completed nuclear weapons capability and the reason they will not give IAEA inspection teams access to several contested sites in the Yongbyon nuclear complex is that they do not want the rest of the world to know it and are seeking to trade on outside

beliefs and assumptions to make political and security gains."

What is known for sure is that the North Koreans operate a 5-megawatt electric nuclear reactor, and regardless of whether they removed and reprocessed fuel earlier, as is widely suspected, they recently discharged the entire fuel core that they claim must be reprocessed in the near future. What will become of that fuel is one of the questions being negotiated in the high-level talks between U.S. and North Korean officials.

**'We operate on the assumption that North Korea probably has done what is necessary to be able to produce nuclear explosives and that they have the material to assemble several nuclear devices.'**

— Lawrence Scheinman

The most recent round of those talks was completed in Geneva on Aug. 13.

"Our primary objective should be to freeze their program and stop further action," Scheinman said. "This does not mean overlooking the past, which must ultimately be accounted for, but rather of asserting immediate priorities: Don't fight over what did or did not happen before while losing control over what is going on now and could happen in the near future," he said.

"While we should not be bargaining with the Koreans over commitments they have made in international treaties, we should

seek to capitalize on their quest for normalization of political, security and economic relations, especially with the United States, and to tie it to their compliance with treaty undertakings," he added.

The North Koreans are building a 200-megawatt electric nuclear power plant that is expected to be completed in 1996 and that could provide enough fissile material to produce 10 bombs a year, or 50 by the end of the century, Scheinman said. "Even if they didn't themselves launch a bomb, they could sell

the material to whomever would buy it, he added, "and in an increasingly fragmented world in which regional tensions have supplanted the earlier bipolar struggle, that would be a very dangerous situation."

Developments in the past several weeks in Geneva give some basis for hope that we may be able to bring this dangerous situation under control, Scheinman said.

Korea, of course, is not the only problem. Since the collapse of the former Soviet Union, the danger of nuclear disaster has shifted from one set of problems to another. There are reports of weapons-grade pluto-

nium from Russia being offered for sale on the black market of Europe. Scheinman said he concurs with most observers that while sufficient quantities of plutonium to produce such a weapon probably have not been sold off, the threat that they can be exists.

A bill sponsored two years ago by senators Sam Nunn and Richard Lugar directed \$1.2 billion to the repatriation of nuclear weapons to Russia from the other republics of the former Soviet Union, to their safe and secure dismantling and to improving Russian systems for securing, storing and accounting for nuclear materials.

That will work toward solving one part of the nuclear threat, the safeguarding and disposition of weapons no longer part of the remaining nuclear forces of the former Soviet Union. But what about the scientists who devised the weapons?

A number of Arab missions are reported in the press to have been to the Ukraine and to Kazakhstan to buy brain power and equipment. "The stories you hear are probably phony, but these countries are desperate for money. The problem is real and must be addressed head on," Scheinman said.

To address this kind of problem, an International Science and Technology Center has been established in Moscow with another to take shape in Kiev with support from the United States, Japan and several European countries.

"The ISTA's objective is to find constructive work for nuclear scientists in the former Soviet Union who might otherwise be tempted to sign on with foreign governments," Scheinman said.

## Cornellians at the American Chemical Society meeting

### 3-D 'virtual spider' could lead to plants that grow super fiber

By Roger Segelken

WASHINGTON, D.C. — Genetically engineered plants growing strong-as-steel fibers are a step closer, now that biophysicists at Cornell have determined some aspects of the molecular structure of one of nature's most remarkable materials — the dragline silk of the golden orb-weaving spider.

Alexandra Simmons, Edward Ray and Lynn W. Jelinski reported results of their nuclear magnetic resonance (NMR) analyses of spider silk Monday at the national meeting of the American Chemical Society here. More details of the spider study are in an article by the Cornell team in the Aug. 29 issue of the journal *Macromolecules*.

"Don't look for fields of plants growing fiber for bullet-proof vests or ultralight parachutes — at least not right away — although the U.S. Army is very interested in our work," said Jelinski, Cornell professor of engineering and director of the Center for Advanced Technology (CAT) at the Cornell Biotechnology Program. "But we have been able to unambiguously define the crystalline regions and the amorphous regions of the dragline silk, and that gets us one or two steps closer to using this material in real life."

The research was funded by the National Science Foundation and by the Natural Sciences and Engineering Research Council of Canada. The Cornell CAT in Biotechnology is funded by the New York State Science and Technology Foundation.

Simmons is a postdoctoral fellow and Ray is an undergraduate researcher in the Cornell Biotechnology Program, which seeks to apply basic research findings to real-world problems, and the need for stronger, lighter fabrics is one of those problems. Spider silk — particularly the dragline silk that the golden orb-weaving spider produces first to support the rest of its web — has the tensile strength of steel fiber of the same diameter, yet it can stretch and rebound from at least 10 times its original length. That is better performance than any metal or synthetic fiber.

Putting spiders to work farming silk for super fabrics would seem logical, except that it takes more than 400 spiders to produce enough silk for a square yard of cloth. The Cornell researchers were able to draw about 40 yards of dragline silk at a time from each spider, more than enough for their NMR studies but far from weaving anything practical. The economics of spider farming have restricted the material to applications



Sharron Bennett/University Photography

Alexandra Simmons with an orb-weaving spider.

such as cross hairs in gun sights and surveyors' transits. Even that market disappeared after World War II with the advent of synthetic fibers and new technologies.

In the age of biotechnology, Jelinski is reviving interest in the potential of spider silk, hoping to develop new polymers that mimic the strong, elastic spider silk.

"A raw material, analogous to the fluid from the spider's silk glands, might be extracted from genetically altered plants farmed

for silk production, then processed into silk-like fibers," Jelinski said. "These materials would be based on a renewable resource — plants — rather than the fossil fuels used to manufacture polyester and nylon."

The mechanical properties of dragline silk are thought to depend, in part, on the processing that the fluid polymer undergoes, and the Cornell team expects to find clues to understanding the process in the spider's abdomen. Silk polymer, once it

leaves the gland where it is produced, must travel through a convoluted duct. The duct is five times longer than the distance from the internal gland to the spider's spinneret, the organ that releases the silk.

"During the journey through the duct, the silk molecules align themselves, becoming organized and partially crystalline," Simmons observed. "This process continues until what emerges is an oriented, solid fiber — the dragline silk."

So the Cornell team employed the same NMR technique used in hospitals to visualize the internal anatomy of the spider, although they faced one major challenge: While much is known about the internal structure of the human body, and the interpretation of medical NMR images is fairly straightforward, the spider abdomen is uncharted territory. Biologists' attempts to dissect the spider abdomen and study its internal structure usually fail because the fluid-filled sack collapses when it is punctured and the orientation of internal organs is lost.

The NMR images by the Cornell team were the first ever obtained of a spider, although they are still bewildering to interpret, Jelinski admitted. By combining digital information from NMR imaging with images from optical microscopes, however, the biophysicists hope to observe the glandular structures in the spider's abdomen and to monitor the silk production process.

They devised a way to create a 3-D "virtual spider" by compiling stacks of 2-D NMR images with an IBM Power Visualization System, one of the high-performance supercomputing resources at the Cornell Theory Center, funded by Cornell, New York state, IBM and other corporations. Each image contains more than 100,000 pixels, and hundreds of images are needed to construct the 3-D simulated spider.

The virtual spider can be dissected by computer to expose the anatomy of the glandular system and to provide the physical processing information the biophysicists seek.

At the same time, the Cornell biophysicists are gaining insight by studying the web silk polymer at the molecular level, in particular the amino acids that comprise its building blocks.

Using such techniques as solid-state NMR spectroscopy and synchrotron X-ray diffraction to determine the molecular structure, they are closer to learning the roles played by different amino acids in the unique properties of the silk.

### Potato black spotting enzyme is targeted by Cornell researcher

By William Steele

WASHINGTON, D.C. — Researchers at Cornell and Keygene, a biotechnology company in the Netherlands, have found a way to reduce the black spotting that results when potatoes are bruised, and perhaps also the browning that results when apples and other fruits and vegetables are cut open.

The discoloration results when the plant tissue is exposed to air. John C. Steffens, Cornell associate professor of plant breeding and biometry, has demonstrated that an enzyme called polyphenol oxidase (PPO), which is released when the tissue is cut or torn, speeds the oxidation of chemicals in the plant to create pigments called melanins. Workers in Steffens' laboratory isolated the gene that codes for PPO and used a modified version of it to switch off production of the enzyme.

In collaboration with Keygene, this approach now has been used to grow potatoes that resist bruising and browning. Steffens described the research Tuesday at a session on Enzymatic Browning and its Prevention in Foods at the annual meeting of the American Chemical Society here and will publish a report in the September issue of the jour-

nal *BioTechnology*.

Browning is more than a minor annoyance to consumers: When black spotting appears, commercial food processors throw away the whole potato, and it costs them plenty, Steffens said.

"In addition to affecting the harvested produce, it necessitates the use of various food additives or treatments to prevent brown-

and other workers in his laboratory have been studying the problem for the last two years. They first identified and copied the gene that codes for the browning enzyme in tomatoes. Then they created in the laboratory a gene that is a mirror image of the original.

When a plant cell manufactures an enzyme, it first makes a sort of "template" of the gene in the form of a strand of RNA. The

**'Brown discoloration in fruit and vegetables reduces consumer acceptance, so it's a major problem for the food industry.'**

— John Steffens

staining in fresh and processed products like juices," said Steffens, who teaches courses in plant biochemistry.

Traditionally browning has been controlled by adding sulfites to food, but most uses of sulfites have been restricted or banned because some people are violently allergic to them. "The alternatives are more expensive. It would be best to have a product that doesn't brown to begin with," Steffens said.

Steffens, graduate student Michelle Hunt

gene Steffens created makes RNA that is complementary to the PPO template and is thought to attach to it like one strip of Velcro to another, blocking its action. This "antisense" technology is becoming an important tool for modifying plant biochemistry.

"We began the antisense work in tomatoes as a model system to determine whether knocking out expression of this gene would be deleterious or lethal to the plant, as many workers in this field have suggested,"

Steffens explained. "When we showed that antisense did not affect plant performance, it became clear that we could transfer the approach to other crops in which PPO has an economic impact on crop quality. One of the most economically important of these crops is potatoes."

Steffens and Hunt designed an antisense gene for potatoes and supplied copies to colleagues at Keygene. Keygene workers inserted the gene into two commercial potato varieties, Diamant and Van Gogh, both noted for a high level of black spot resistance compared with other varieties. "The challenge was to see whether our approaches could increase black spot resistance over and above what traditional breeding techniques have achieved," Steffens explained.

Keygene has grown potatoes with the new gene in Holland. When subjected to a standardized mechanical damage test used by potato breeders, the new lines showed significantly less discoloration compared with non-transformed varieties.

Steffens cautions that no one knows what other functions the PPO enzyme may perform. One guess is that it helps the plants resist insect attacks by making the tissues they chew into unpalatable.

# Moderate malnutrition bigger problem than thought

By Susan Lang

About 56 percent of children's deaths in the developing world are due to the interactive effect of malnutrition on disease, contrary to previous estimates that malnutrition is responsible for only 5 percent of the deaths, according to a new Cornell study.

And counter to the widely held perception that it is only severe malnutrition that contributes to child mortality in the Third World, researchers found that the vast majority of malnutrition-related deaths — 83 percent — are due to mild-to-moderate malnutrition rather than severe malnutrition.

"We have been seriously undervaluing the impact of malnutrition in general, and mild-to-moderate malnutrition in particular on child mortality," said David Pelletier,

**'All three elements, food, health and care, must be considered if we are to reduce child mortality worldwide.'**

— David Pelletier

Ph.D., an associate professor of nutrition policy at Cornell.

Pelletier and his co-researchers have developed an empirically based model to estimate the effect of malnutrition on child mortality based on age-to-weight data.

They have found that children with severe malnutrition have a risk of death 8.4 times higher than children who are adequately nourished. Children with moderate malnutrition have a 4.6 higher risk, and those with mild malnutrition have a 2.5 higher risk.

That means that the 184 million preschoolers in developing countries — 34 percent — who are underweight are at significantly higher risk of death due to malnutrition.

"These numbers suggest that malnutrition's multiplicative effect on disease is a powerful underlying cause of child mortality in developing countries and that pro-

grams and policies directed solely toward severe malnutrition have only a minor impact," said Pelletier, a physical anthropologist who applies that field to the study of nutritional problems in populations.

Pelletier's research on the association between malnutrition and mortality in developing countries as measured in eight prospective studies is to be published this month or next in the supplement to the *Journal of Nutrition*. The findings were presented at the Federation of American Societies for Experimental Biology (FASEB) in April in Anaheim, Calif. An earlier paper on the potentiating effects of malnutrition on child mortality was published in the August 1993 issue of the *American Journal of Public Health*. The application of the mathematical model to 53 developing countries will be published this fall in *The WHO Bulletin*.

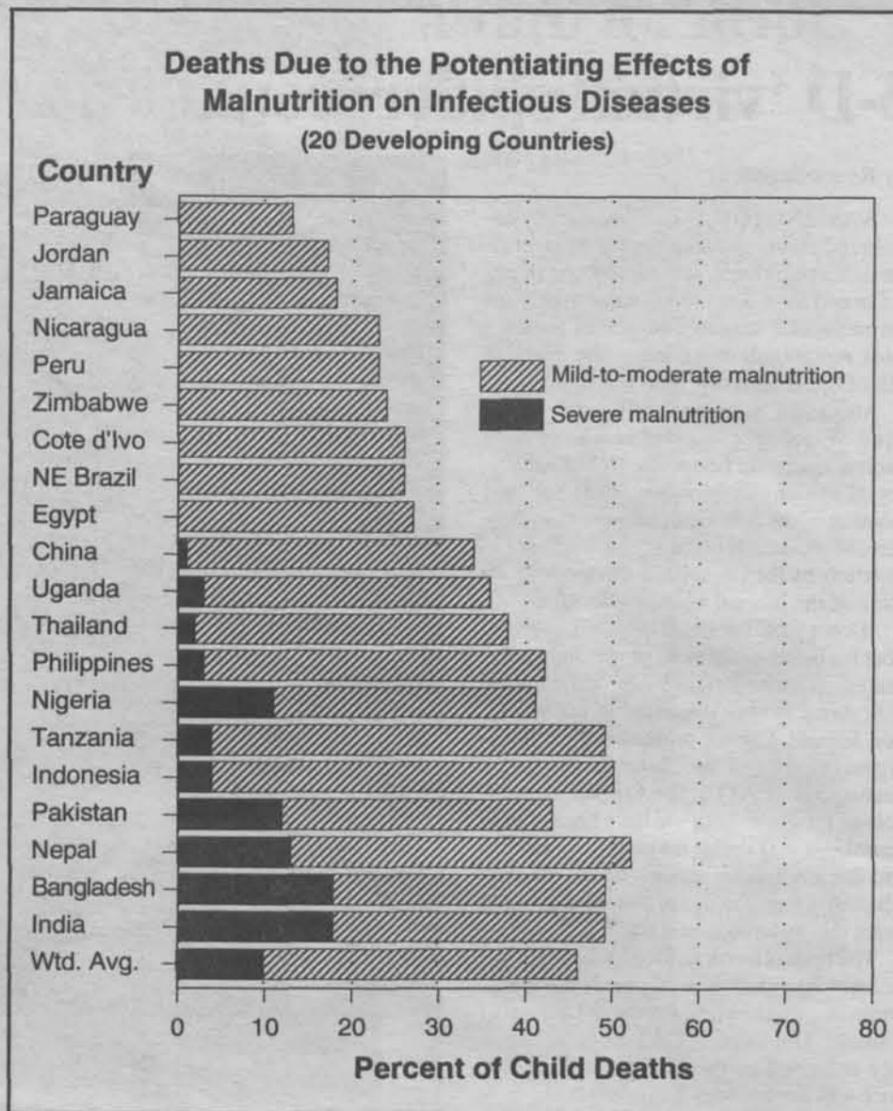
The research, funded by the Nutrition Section of UNICEF, was done under the auspices of the Cornell Food and Nutrition Policy Program in the College of Human Ecology. Collaborators include Edward Frongillo and Jean-Pierre Habicht of Cornell and Dirk Schroeder of the Emory University School of Public Health.

Conventional methods of classifying cause of children's deaths in developing countries attribute about 70 percent to a small number of infectious diseases and have overlooked the potentiating effect of malnutrition on these diseases. As a result, these diseases have received the vast majority of resources in the health field, Pelletier said.

He pointed out that nutritional status is not merely based on the availability of food, but on the availability of nutrients at the cellular level. Disease can interfere with the absorption, transport or utilization of nutrients, while malnutrition may increase the susceptibility to and severity of disease.

Malnutrition, therefore, is related to more than food insecurity: It also relates to inadequate maternal and child care, to insufficient health care and poor water, sanitation and environmental conditions.

"All three elements, food, health and care, must be considered if we are to reduce child mortality worldwide," stressed Pelletier, who has been consulting with international



organizations on these policy issues. His work should help redirect greater attention to malnutrition in the spending of the recently approved \$285 million by Congress for child survival programs and policies. Nutrition improvement has not had a prominent focus in such programs in the past.

"These programs must give greater attention to nutrition-related actions, especially those with broad population impacts," Pelletier explained.

"This means not just nutritional supplementation, which targets severe malnutrition, but broader policies that improve health, agriculture, local economics, education and community development, with a special focus on the multiple roles of women in child care, household economics and the community. Only then will mild-to-moderate malnutrition and its impact on disease and mortality be reduced in a sustainable way."

## Rural literacy on agenda

The problems facing rural communities and rural literacy services will be the cornerstone of a conference, "Rural Literacy and Community Development," Sept. 18 to 20 at the Sheraton Inn in Ithaca. The conference will highlight the work of the Rural Literacy Initiative, a collaboration of Literacy Volunteers of America — New York State Inc. and Cornell. The latest research on effective approaches to rural literacy and how to overcome the problems of rural service programs will be highlighted.

The conference also will include a policy panel to address the challenges of integrating education, social service and economic development policy at the state and local level.

Linking Cornell Cooperative Extension and Literacy Volunteers with BOCES and the Department of Social Services' new initiative on job readiness can provide a powerful combination for adult education, workforce preparedness and community development. The conference is intended for literacy practitioners and educators, community development practitioners, human service providers and others interested in literacy and rural economic development.

The registration fee is \$60. For further information, contact Kathy Dennis at Cornell's Community and Rural Development Institute, 255-9510.

## Managed mental health care 'works' for new users

By Susan Lang

A managed mental health "carve-out" benefit seemed to "work" when employees had not been using mental health services, according to a study by Cornell/University of California at Berkeley researchers.

With the new benefit that offers low out-of-pocket expenses when "network" providers are chosen, more workers used mental health services, if needed, but for a limited time only.

For employees who had been using mental health services before the new benefit was offered, however, a managed mental health benefit had little impact. These workers did not change their use patterns significantly regardless of the new incentives.

The study, the first and only study on managed mental health carve-outs, also found that Asians and employees who experienced no change in their marital status or number of dependents were most apt to use mental health services after the new benefit was offered.

"The probability of all the employees using outpatient mental health services increased some 16 percent the year the new benefit was offered, which is consistent with national trends. At the same time, the number of visits per user went down," said Kyle Grazier, Ph.D., professor of health care finances at Cornell and director of the Sloan Program in Health Services Administration.

Nationally, mental health care costs are rising by as much as 60 percent a year, compared with a 21 percent increase in general health care expenditures, Grazier pointed out. To better contain costs, employers are increasingly turning mental

health care services over to a separate mental health care vendor. Employees may choose network providers and pay less out-of-pocket, or use non-network providers and pay more.

To determine the impact of a new managed mental health benefit on the use of outpatient mental health services by employees, Grazier and her colleagues at Berkeley, Richard M. Scheffler, director of the Institute for Mental Health Services Research, doctoral student Stephanie Bender-

**'It appears there is potential for effective managed mental health care, especially among employees who did not use services the year before the benefit was offered.'**

— Kyle Grazier

Kitz and programmer/analyst Paul Chase, examined the use patterns of 4,220 employees in one company from 1990 to 1992. The new benefit began in 1991.

They published their findings in *Advances in Health Economics and Health Services Research* (14:71-86, 1993).

Specifically, the researchers found that when employees saw network providers only, prior users of mental health services had an average of 10 visits during the year compared with only 2.6 visits per each new user.

A similar pattern emerged among em-

ployees using only non-network providers: Prior mental health services users had 11 visits compared with new users who had only five visits during 1991.

"Health policy experts had assumed that managed mental health care would be ineffective because employees would be reluctant to change their providers to those in the network," said Grazier, who teaches health care finance and information resources management in the College of Human Ecology. "Although our study suggests this may be the case among prior mental health users, it appears there is potential for effective managed mental health care, especially among employees who did not use services the year before the benefit was offered."

Managed mental health carve-outs are becoming increasingly common, with corporations such as General Electric, McDonnell Douglas, Pepsico, Xerox, Chevron, IBM, General Dynamics, AT&T and General Motors, among others, having implemented some form of this type of program in recent years.

"Yet, there is a serious lack of empirical research on employment-based mental health managed care programs," Grazier said. "In fact, there are no other published empirical studies on the effectiveness of these programs despite their popularity among large employers."

The research team will follow up this research with a similar but more comprehensive five-year study to determine if the trends observed in the two-year study are sustained.

The two-year pilot study and the upcoming five-year study are supported by the National Institutes of Health.

# Welcome Class of 1998



Above, students on West Campus prepare to move into their new homes for the fall semester. At right, President Rhodes talks to incoming freshman Michael Pfau and his family before the President's Convocation in Barton Hall Aug. 20. Below, students line up outside Alberding Field House on Saturday waiting to register.



## Convocation *continued from page 1*

Cornell, Rhodes encouraged crossing of disciplinary boundaries and seeking out new cultural experiences. He recommended attending concerts and visiting the Johnson Museum, and told students that their goal should be to get to know two or three faculty members by the end of their first year.

Incoming students were assured that they could succeed and prosper at Cornell; of the 21,000 applicants, Rhodes noted, "you are the survivors, you are the victims, and of course you can make it here." He did hint at the trials involved in "making it," as he described the common experience of getting that first "C" on a paper and learning that "a 'C' means you're an average brilliant Cornell student."

Rhodes' final words of advice were "Go for it," a vigorous command to students to seize every opportunity offered by "life's little swingtime. If you hit the ball over the fence, you can take your time going around the bases."

Photographs by  
University Photography



# CALENDAR

August 25 through September 1

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

### 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. For information, call 387-6547.

• Aug. 28: 7:30 p.m., dance instruction; 8:30 p.m., open dancing and requests; North Room, Willard Straight Hall.

## 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.

### Thursday, 8/25

Student Film Show, with guest speaker Marilyn Rivchin, 7 p.m.

"Four Weddings and a Funeral" (1994), directed by Mike Newel, with Hugh Grant and Andie MacDowell, 10 p.m.

### Friday, 8/26

"Four Weddings and a Funeral," 7:10 p.m., Uris.

"Rashomon" (1950), directed by Akira Kurosawa, with Toshiro Mifune and Machiko Kyo, 7:30 p.m.

"Blue" (1993), directed by Krzysztof Kieslowski, with Juliette Binoche and Benoit Regent, 9:40 p.m.

"Reality Bites" (1994), directed by Ben Stiller, with Winona Ryder, Ethan Hawke and Ben Stiller, 9:45 p.m. and midnight, Uris.

### Saturday, 8/27

"Reality Bites," 7 p.m., Uris.

"Blue," 7:30 p.m.

"Four Weddings and a Funeral," 9 p.m. and midnight, Uris.

"Citizen Kane" (1941), directed by Orson Welles, with Welles and Joseph Cotton, 9:50 p.m.

### Sunday, 8/28

"Four Weddings and a Funeral," 8 p.m.

### Monday, 8/29

"Masked Monkeys," a 40-minute BBC film by Jonathan Kingdon, sponsored by Physiology and Anatomy Seminar Series, 4 p.m., Veterinary Teaching Center, Lecture Hall 2.

"Rashomon," 7:30 p.m.

"Reality Bites," 9:30 p.m.

### Tuesday, 8/30

"Blue," 7:30 p.m.

"Reality Bites," 9:45 p.m.

### Wednesday, 8/31

"Citizen Kane," 7:20 p.m.

"24th International Tournee of Animation," 10 p.m.

### Thursday, 9/1

T.V. Families, Program #1, with guest filmmaker Todd Haynes, includes "Dottie Gets Spanked" by Haynes and "Psychic Mom" by Shell Ainsworth, 7:20 p.m.

"Sirens" (1994), directed by John Duigan, with Elle Macpherson and Sam Neill, 10 p.m.

## graduate bulletin

• **Late registration:** Bring student ID card to the Registrar's Office, 222 Day Hall, and go to the Graduate School for course enrollment.

• **Course enrollment:** Forms are available in graduate field offices and at Sage Graduate Center. Return completed form in person by Friday, Sept. 16, to the Graduate School. Students who completed pre-course enrollment forms last spring do not need to complete a course enrollment form; if there is a change in their schedule, they should complete a Course Drop and Add form.

• **Faculty meeting:** Friday, Sept. 2, 4 p.m., General Committee Room, Sage Graduate Center. This meeting is solely for the purpose of voting on August degrees.

• **Study abroad:** Applications for Fulbright grants for study abroad are available for the 1995-96 academic year; contact R. Brashear, director of Graduate Admissions, Sage Graduate Center, 255-3912. Applicants must be U.S. citizens; completed applications are due mid-September.

• **TA workshops:** Saturday, Sept. 10; registration forms at graduate field offices or Office of Instructional Support, 14 East Ave., Sage Hall, phone 255-3493. There is no charge to students.

## lectures

### Art Department

"Key Frames for the Artist in the 21st Century," Richard Loveless, Arizona State University, Aug. 30, 5 p.m., 115 Tjaden Hall.

## music

### Music Department

Annette Richards, Cornell's new university organist, will give her first public concert on the Aeolian Skinner organ in Sage Chapel on Aug. 27 at 8:15 p.m. The evening's concert includes works by J.S. Bach, Cesar Franck, C.M. Widor, Olivier Messiaen, Felix Mendelssohn and Jehan Alain.

### Bound for Glory

Aug. 28: Howie Bursen will perform traditional American folk in three live sets at 8:30, 9:30 and 10:30 p.m. in the Commons Coffeehouse, Anabel Taylor Hall. Admission is free and open to the public; kids are welcome, and refreshments are available. Bound for Glory can be heard Sundays from 8 to 11 p.m. on WVBR-FM, 93.5.

## religion

### Sage Chapel

The Rev. Robert L. Johnson, director of Cornell United Religious Work, will give the sermon Aug. 28 at 11 a.m. Sage is a non-sectarian chapel that fosters dialogue and exploration with and among the major faith traditions.

### African-American

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

### Baha'i Faith

Fridays, 7:30 p.m., firesides with speakers, open discussion and refreshments. Sunday morning dawn prayers and breakfast, 7 a.m.. For details, call 272-5320.

### Catholic

Weekend Masses: Saturday, 5 p.m.; Sunday, 10 a.m., noon and 5 p.m., Anabel Taylor Auditorium. Daily Masses at 12:20 p.m. in Anabel Taylor

## Director of Institute for Studies in the Arts will lecture Aug. 30

Richard L. Loveless, director of the Institute for Studies in the Arts at Arizona State University, will present "Key Frames for the Artist in the 21st Century" on Tuesday, Aug. 30, at 5 p.m. in 115 Tjaden Hall. The lecture, which is sponsored by the Department of Art, is free and open to the public.

Loveless has headed the Institute for Studies in the Arts since it opened in 1991. The institute awards grants to artists, scholars and technologists to investigate new ways to create, experience and teach the arts. The institute's mission is to challenge participants to form new aesthetic theories and practices for the use of contemporary media technologies. Grants are awarded in the following areas: interactive media and human performance; visualization, sound and text composition; telecommunications; and interdisciplinary projects.

Prior to joining the institute, Loveless served in a variety of positions at the University of South Florida, including as director of the Center for Innovative Technology for Education Futures. He also has served as fine arts coordinator for the Pennsylvania State Department of Education and as a supervisor of art for Pennsylvania public schools.

Loveless earned a bachelor's degree from Edinboro State University in 1956 and a



Richard L. Loveless

master's degree from Pennsylvania State University in 1964. He held a postgraduate fellowship in 1985 at the Center for Advanced Visual Studies at the Massachusetts Institute of Technology.

## Media Ithaca announces 1994 awards

Media Ithaca has announced the recipients of the 1994 Media Ithaca Regrant Program. Five awards of \$400 were made to Ithaca-area film and video producers for a variety of projects. Funding is made available through Cornell Cinema and the New York State Council on the Arts.

This year's winners are:

Jorge Cuevas, for a feature-length video about the identity crisis that a New York born and raised Puerto Rican-American faces throughout his life; Marcelle Pecot, for a

film titled "The Journey," which will explore the formal aspects and emotional potential of images; Scott Noegel, whose project "To the Land of No Return" is based on an ancient Babylonian myth of the "Descent of Ishtar"; Paul Glover, who will be documenting the Ithaca Hours barter currency system he created in 1991; and Professor Robert Ascher, whose project focuses on "The Golem," a 2,000-year-old myth that describes the creation of an artificial human being.

Chapel. Sacrament of Reconciliation, Saturday, 3:30 p.m., G-22 Anabel Taylor Hall.

### Christian Science

Testimony and discussion meeting 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, 10:30 a.m., meeting for worship at the Hector Meeting House on Perry City Road.

### Jewish

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

Reform: Fridays 6 p.m., chapel, Anabel Taylor Hall; Conservative/Egalitarian: Fridays, 6 p.m., Founders Room, and Saturdays 9:30 a.m., Founders Room, Anabel Taylor Hall; Orthodox: Friday, call 272-5810 for time, and Saturday, 9:15 a.m., Edwards Room, Anabel Taylor Hall.

### Korean Church

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

### 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

Thursdays, 5 p.m., chapel, Anabel Taylor Hall.

## seminars

### Fruit & Vegetable Science

"Sustainable Berry Crop Production: Paradigm

or Paradox," Marvin Pritts, fruit & vegetable science, Sept. 1, 4 p.m., 404 Plant Sciences Building.

### Genetics & Development

"An Analysis of RNA Editing Sites in Petunia Mitochondria With Emphasis on nad3 and rps12," Robin Wilson, thesis seminar, Aug. 26, 1:30 p.m., small seminar room, Biotechnology Building.

### Physiology & Anatomy

"Graphic Expression in Primates: History and State of the Art," H.S. Robert Glaser, Justus Liebig Universitat, Giessen, Germany, Aug. 30, 4 p.m., G-3 Veterinary Research Tower.

### Textiles & Apparel

"Demand Activated Manufacturing in Apparel (DAMA)," Arnold Peskin, Sept. 1, 12:20 p.m., 317 Martha Van Rensselaer Hall.

## theater

### Department of Theater Arts

Auditions for fall productions will be held Aug. 31 and Sept. 1 from 7 to 10 p.m. in the Flexible Theater, Center for Theater Arts. Sign up in the Green Room 101. Open to Cornell students.

## miscellany

### Cornell Tae Kwon Do Club

The Cornell Tae Kwon Do Club offers instruction for men, women and children in traditional Korean martial arts. Classes are Mondays and Wednesdays from 5:30 to 7 p.m. in the 3rd floor lounge at Noyes Center. Beginners are welcome at all times. Call head instructor David Warden at 277-6850 for more information.