

Cornell CHRONICLE

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Stucky appointed resident composer at L.A. Philharmonic

The bicoastal lifestyle usually associated with actors, producers and agents also will belong for the next two years to Associate Professor of Music Steven Stucky, who has been appointed composer-in-residence with the Los Angeles Philharmonic Orchestra.

Andre Previn, music director of the orchestra, said he looked forward to working with Stucky, "who, as a conductor, writer and lecturer, as well as a composer, will bring a stimulating new voice for new music to the Philharmonic and to the community."

Previn conducted the West Coast premiere of Stucky's "Dreamwaltzes" last fall and scheduled his "Concerto for Orchestra" to be performed next April even before the composer-in-residence award was decided.

Stucky will write a major symphonic composition for the Philharmonic, and its premiere performance will take place in 1991.

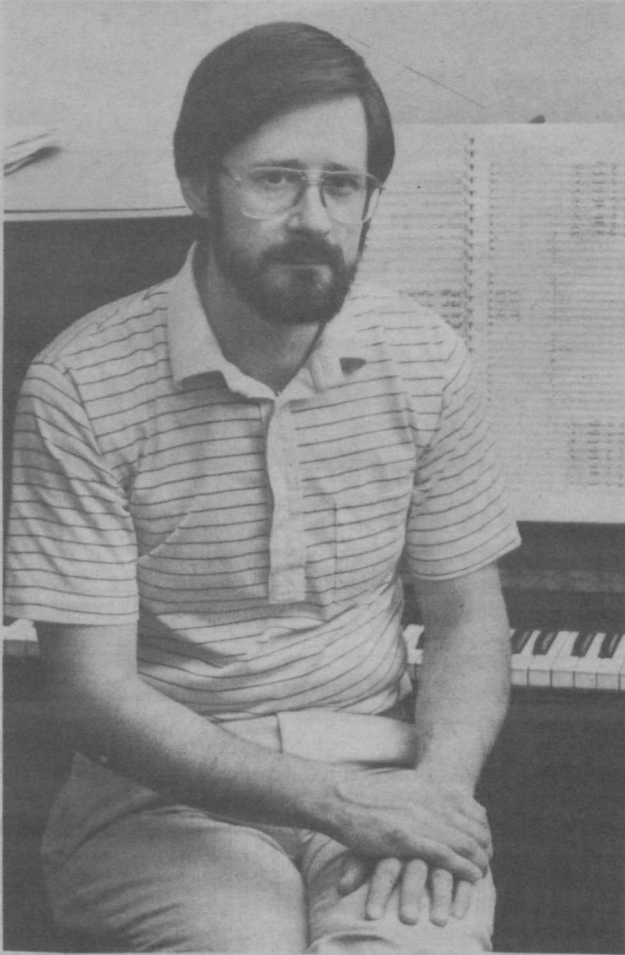
Nine major American orchestras benefit from the Meet the Composer Orchestra Residencies Program, which was founded with major foundation grants in 1981.

Stucky explained that a major part of his role in Los Angeles will be to advise Previn on the availability of contemporary scores, "to be an advocate for living composers," as well as "to be out in the real world of making a living as a composer."

"It's a great honor," he said. "And it's a real opportunity to do something for fellow composers. Previn himself is a composer, so he is sympathetic to new music. And the orchestra is wonderful, they play terrifically well, and they are friendly, open-minded, sympathetic people."

The climate for contemporary music is congenial enough to support a separate subscription series by Philharmonic players who perform in small-group concerts. This year, 75 of the orchestra's 100 musicians signed up for the contemporary series, for which Stucky will do the programming and some of the conducting.

Stucky also will continue to work with his composition students here, concentrating his contact with them into the



Steven Stucky

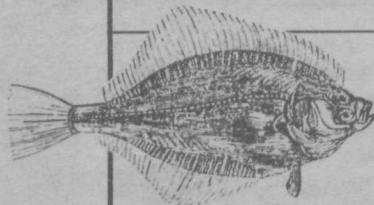
Claude Levett

periods of his visits to Ithaca. Professor Thomas A. Sokol, music department chairman, said that "Steve's selection for this distinguished post recognizes his outstanding achievements as a leading American composer, and we are pleased that he will retain Cornell as his home base, teaching on a part-time basis during the term of his Los Angeles project."

—Irv Chapman

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Drought update
for the
Northeast



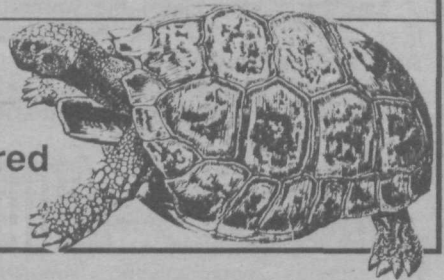
Georges Bank fishing ground

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Saving
endangered
reptiles



Bonding cap vote gives new life to building projects

More than \$100 million in stalled construction and renovation projects at Cornell got new life Tuesday when the State Senate voted to increase from \$3 billion to \$4 billion the amount of bonds that can be issued to finance State University of New York capital projects.

If the Assembly concurs after returning to Albany in late August or early September and if Governor Cuomo signs the measure, Cornell will be able to proceed with \$102 million worth of work at its four state-supported colleges, said Stephen Philip Johnson, executive director of government affairs.

"The raising of the cap on SUNY's bonding authority was the single highest legislative priority of the Cornell trustees," Johnson said.

"A companion bill has been introduced in the Assembly's higher education committee, and we are hopeful that SUNY will soon receive full legislative approval to proceed with these critically important projects," Johnson added.

Cornell's College of Veterinary Medicine would be among the largest single beneficiaries if the measure becomes law.

Although the college has begun to formulate its \$70 million master development plan, legislation allowing the financing was required before work could begin.

The plan calls for adding 236,000 gross square feet of teaching and clinic space and renovating 79,500 gross square feet.

Lifting the cap also will clear the way for expansion and rehabilitation of Mann Library, which serves the College of Agriculture and Life Sciences and the College of Human Ecology, and for similar improvements at the Catherwood Library of the School of Industrial and Labor Relations.

"Further delays in completing the long-overdue renovation at both Catherwood and Mann would seriously limit their effectiveness for our students and faculty," Johnson said, adding that the libraries are widely regarded as among

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Advances made in creating realistic computer graphics

By dramatically speeding up a technique for creating realistic computer graphics and allowing a preview of the images as they are being created, Cornell researchers have opened the way for greater realism in computer graphics used in science, engineering and design.

The researchers from the Cornell Program of Computer Graphics explained their latest advance in a paper delivered on Aug. 3 at the annual meeting in Atlanta of SIGGRAPH, the leading forum for computer graphics research. The scientists reported a new approach to producing computer graphics using the technique of "radiosity," which renders scenes with a subtle, realistic interplay of light and shadow. The radiosity technique calculates how light reflected from various diffuse surfaces affects the look of other surfaces. It was developed by the Cornell researchers.

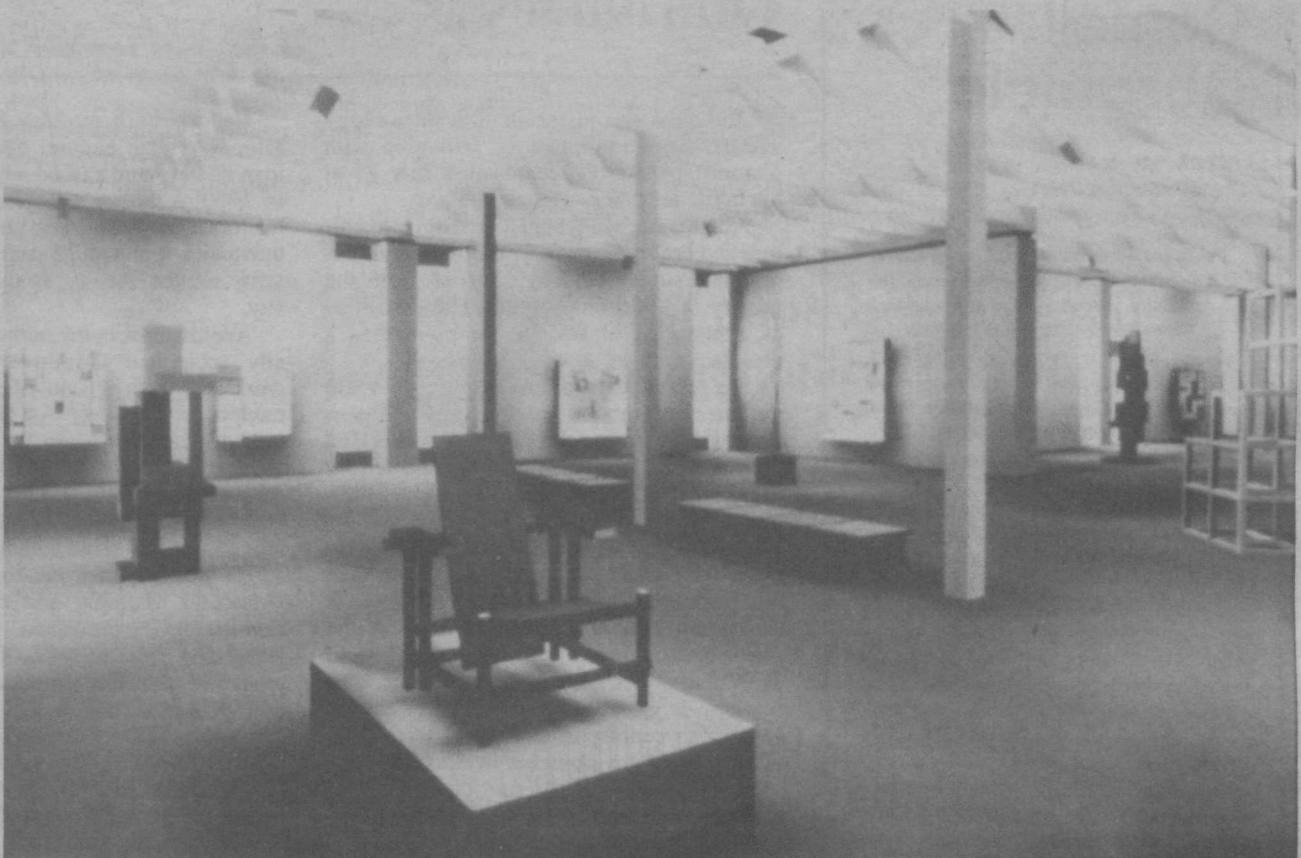
Until now, radiosity has required a heavy load of computing power and memory, often needing hours or days to generate a solution, using even the most powerful minicomputers.

The Cornell paper, entitled "A Progressive Refinement Approach to Fast Radiosity Image Generation," reports a means to speed the radiosity technique by at least 100-fold, so that highly complex scenes that formerly took days to compute now can be completed in minutes.

This computing approach also can be applied to parallel computers, which use many processors operating together. With such future advances, it will be possible to build graphics computers that can render extremely realistic scenes very quickly, the researchers said.

The SIGGRAPH paper was written by Assistant Professor of Architecture Michael Cohen, graduate student Shenchang Eric Chen, former graduate student John R. Wallace and Donald P. Greenberg, the Jacob Gould Schurman Professor of Computer Graphics and director of the Cornell

Continued on page 2



Cornell Program of Computer Graphics

Computer graphic rendering of an imaginary museum using the improved radiosity technique developed by the Cornell Program of Computer Graphics.

Notables

Richard Strassberg, director of the labor-management documentation center at Cornell, has been named a 1988 recipient of the State University of New York Chancellor's Award for Excellence in Librarianship. He is one of four librarians in the 64-campus SUNY system singled out for the honor this year.

Strassberg, who joined the Cornell library system in 1968, has been director since 1976 of the documentation center in the Martin P. Catherwood Library of the New York State School of Industrial and Labor Relations at Cornell. He also has been associate director of the Catherwood Library since 1981.

Robert E. Doherty, who stepped down as the ILR School's dean on June 30, said Strassberg is "more than the custodian of our archival collections; he is a scholar among scholars." Strassberg is a founding member of the New York State Labor History Association and has written numerous articles for professional journals and has presented papers before archival and union groups.

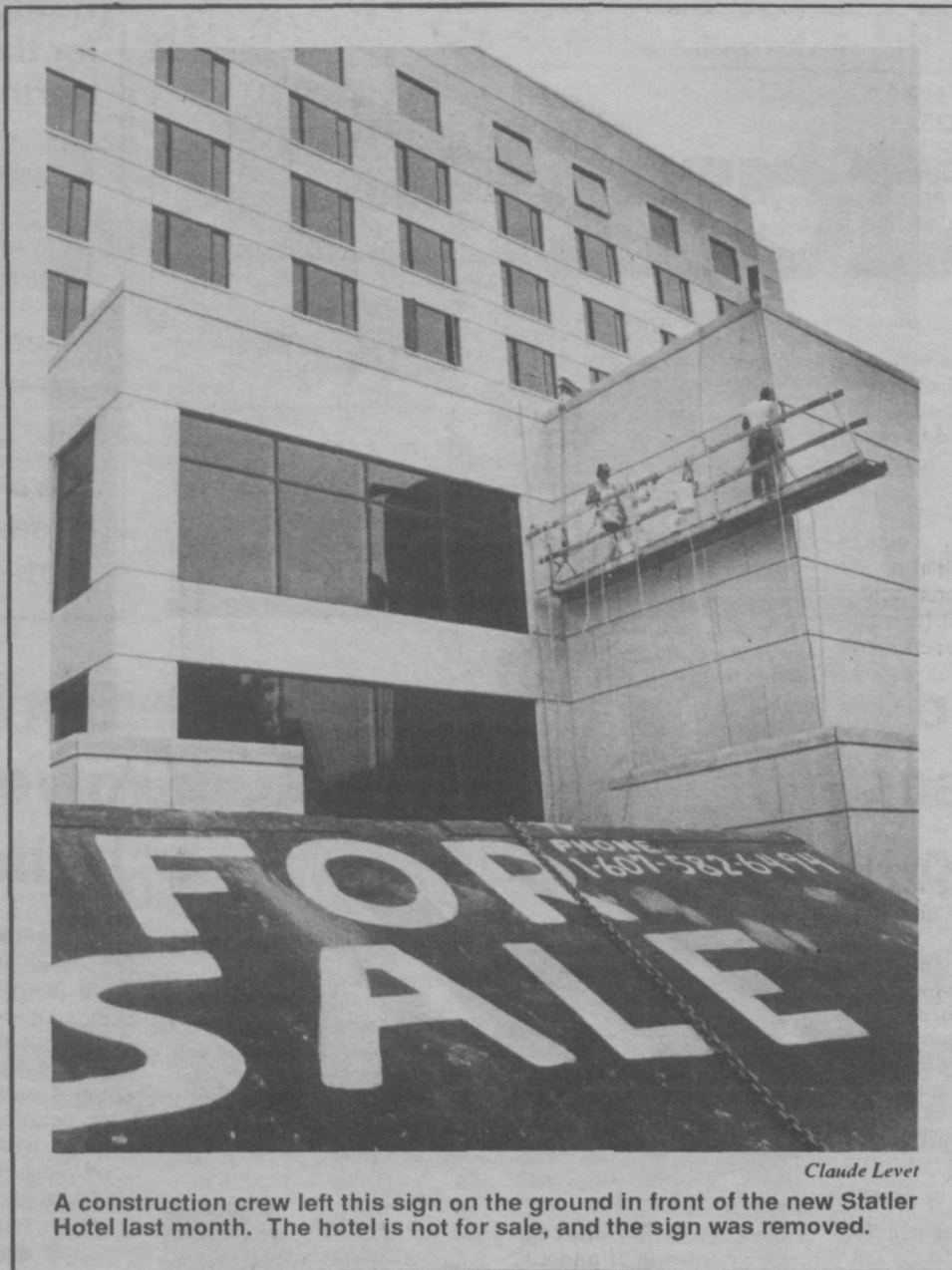
Malcolm A. Noden, senior lecturer in the School of Hotel Administration, has been elected chairman of the newly formed Tourism Educators Council established by the Board of Directors of the New York State Hospitality & Tourism Association.

The council comprises representatives from public and private educational institutions, the tourism industry and the New York State government. Its charge includes addressing legislative issues relevant to tourism education and increasing recognition of career opportunities in tourism. The association, which is based in New York City, represents lodging properties totaling more than 85,000 rooms. A specialist in tourism, Noden, who joined the Hotel School faculty in 1971, was active in the tourism industry in Canada and the United States during the 1950s and '60s.

Associate Professor of agricultural economics **William H. Lesser** has been awarded a 1988 Kellogg National Fellowship for a program established in 1980 to help the nation expand its pool of capable leaders. Lesser, 41, is one of 43 Americans selected by the W.K. Kellogg Foundation to receive \$35,000 over a three-year period to fund self-designed plans of study in areas outside their disciplines "so they can deal more creatively and effectively with society's complex problems," according to a foundation spokesman. The fellowships also provide 12.5 percent of a recipient's salary, up to \$24,000, to allow time to take part in the Kellogg program.

Lesser said he will study historical, social and cultural attitudes towards the adoption of new technologies. A member of the Cornell faculty since 1978, Lesser earned a

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A construction crew left this sign on the ground in front of the new Statler Hotel last month. The hotel is not for sale, and the sign was removed.

Computer graphics *continued from page 1*

program.

"A major feature of this method is that it can be built into hardware that will allow real-time production of scenes based on radiosity techniques," said Chen, who delivered the paper. "Also, the technique is one of progressive refinement, in which a good approximation of the final image is available very quickly."

"This means that a user can get an early look at the image and stop the process at an early stage if the image isn't coming out right."

The researchers said the progressive refinement feature of the new approach is "graceful," meaning that the early version of a graphic scene proceeds automatically and continuously to the final realistic version.

The improved radiosity technique automatically chooses the most important light

sources in a scene on which to base initial calculations. After the computer does that, it proceeds to refine the scene by adding the effects of the less important light sources, as well as their reflections from various surfaces in the scene.

The radiosity technique was speeded up by improving how the light-reflecting relationships among the huge number of segments — called "patches" — in a scene are calculated. In the new approach, these relationships, called "form-factors," are computed as they are needed, rather than being completely computed, stored and recalled.

The new programs were developed on a network of Hewlett-Packard 825 SRX workstations. The research was supported by the National Science Foundation, as well as by equipment grants from Digital Equipment Corp. and Hewlett-Packard Co.

— Dennis Meredith

Briefs

■ **Road closing:** East Avenue, a main artery of the campus, will be closed between Tower Road and Campus Road Aug. 1-7 for installation of a new campus sewer line.

While the project is under way, public and campus bus services will be rerouted. Access for emergency vehicles will be maintained.

■ **Blood pressure:** Five blood pressure clinics sponsored by the Tompkins County Department of Health are scheduled at various sites on campus Aug. 9 through 25:

- Aug. 9, from 1 to 4 p.m. in the conference room of the University Development Office on University Avenue.

- Aug. 10, from 9 a.m. to 2 p.m. in Room 210 of Fernow Hall.

- Aug. 23, from 9:30 to 11:30 a.m. at the time clock in Sibley Hall and from noon to 1:30 p.m. at the time clock at the College of Veterinary Medicine.

- Aug. 24, from 9:30 to 11:30 a.m. at the time clock in Barton Hall, and from noon to 1:30 p.m. at the time clock in Bradfield.

- Aug. 25, from 9:30 to 11:30 a.m. at the time clock in Bailey Hall.

■ **Evening courses:** A complete listing of evening and afternoon full-credit courses offered through Extramural Study at Cornell is available at the B12 Ives Hall offices of Extramural Study or by calling 255-4987. Admission to virtually any course at Cornell is available through Extramural Study, a program which gives area residents an opportunity to update job skills, work towards a degree or simply explore special interests. Extramural registration is scheduled for Aug. 25 and 26 for the fall term.

■ **No microcomputer demonstrations:** The demonstration room of Microcomputers & Office Systems at 110 Maple Ave. will be closed Aug. 8 and 9, but the sales office will still be open to take orders from persons who do not require demonstrations and consultation. All equipment consultants will be out of town for special training.

■ **Photo contest:** A \$100 first prize and \$50 second prize will be awarded in a photo contest of campus scenes taken in either black and white or color. Any number of entries may be submitted by the Aug. 20 contest deadline at the Summer Session Office in Room B12 of Ives Hall. The contest is open to anyone except the employees and their families of the Division of Summer Session, Extramural and Related Programs. Call Alicia Dowd, 255-4987.

■ **The IRS and courses:** Employees who take graduate-level courses (500 and above) that are not related to their jobs are subject to new federal tax regulations. They should contact Training and Development in the Office of Human Resources in Room 107 of Day Hall before registering.

Cornell Chronicle

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It is the policy of Cornell University to support actively equality of educational and employment opportunity. No person shall be denied admission to any educational program or activity or be denied employment on the basis of any legally prohibited discrimination involving, but not limited to, such factors as race, color, creed, religion, national or ethnic origin, sex, age, or handicap. The university is committed to the maintenance of affirmative action programs that will assure the continuation of such equality of opportunity.

Obituaries

Zoologist and historian of science **Howard B. Adelmann**, whose affiliation with Cornell spanned 72 years, died July 25 at his home in Ithaca. He was 90.

Adelmann, who began teaching histology and embryology at Cornell as an undergraduate student in 1919, retired from the faculty in 1966 but continued to be active as a historian of science for more than a decade.

His private collection of more than 4,800 volumes on embryology, anatomy and general biology forms the nucleus of the History of Science Collections established by the Cornell Libraries in 1962. The Adelmann Collection includes five books printed before 1501, more than 100 volumes from the 16th century and more than 500 from the 17th century.

The collection, described as one of the finest of its type in this country by David W. Corson, Cornell's history of science librarian, is especially rich in classics of early 19th century embryology, the period of most rapid development in the field.

Adelmann served as chairman of Cornell's Department of Zoology from 1944 to 1959 and was recognized as an outstanding teacher. In 1941, students elected him the "best" and the "toughest" member of the faculty.

He was born on May 8, 1898, in Buffalo, N.Y. He entered Cornell as a freshman in 1916 and earned a bachelor's degree in 1920, a master's degree in 1922 and a doctorate in 1924. His affiliation with the university spanned 72 years except for two years on the faculty at Columbia University.

Adelmann was the author of internationally acclaimed definitive studies on the work and life of one of the founders of modern embryology — the 17th century Italian scientist Marcello Malpighi. In 1972, the University of Bologna in Italy, the world's oldest university (established in 1088), honored Adelmann with an hour-long, tradition-bound ceremony.

He was cited for his five-volume work, "Marcello Malpighi and the Evolution of Embryology," published by the Cornell University Press in 1966. In his acceptance speech, Adelmann announced the completion of his second multivolume work on Malpighi, "The Correspondence of Marcello Malpighi." This work, also published by the Cornell University Press, is a collection of 1,050 letters to and from Malpighi.

Adelmann's extensive studies in the field of embryology resulted in numerous articles and another book in addition to his volumes on Malpighi. In 1942, his first

book, "The Embryology Treatises of Hieronymus Fabricius de Aquapendente," was published by the Cornell University Press.

He received several prizes and honors for his work, including the Star of Italian Solidarity in 1962, one of four honorary orders conferred by the Republic of Italy.

He is survived by his wife, Dorothy Schullian Adelmann. Funeral services were held July 28 at the Wagner Funeral Home in Ithaca. Interment was in Cleveland.

Donations may be made to the Howard B. Adelmann Memorial Fund, in care of Cornell University Libraries.

Professor Emeritus **Otis Freeman Curtis Jr.**, a pomologist at the New York State Agricultural and Experiment Station in Geneva from 1946 until his retirement in 1980, died July 18 after a long illness. He was 73.

The author of more than 50 published scientific articles, he was a specialist in research on weed control for a variety of fruits. Curtis was born in Ithaca. He earned a bachelor's degree at Oberlin College and a Ph.D. from Cornell.

Survivors include his wife, Elizabeth Mosher Curtis, of Geneva; a daughter, Cynthia Curtis Volin, of Decatur, Ala.; and three grandchildren.

Cornell launches programs to develop black engineers

Special training sessions, intensive counseling and cash scholarship incentives for A's are among the features of two new programs here to develop more black engineers.

The programs, aimed at both promising black high school students and entering minority freshmen, are among the most aggressive efforts at any university to encourage black students to become engineers.

"Cornell's pre-college program is absolutely visionary and unique, particularly because of its depth and continuity," said Joseph D. Toppin, director for field service programs of the National Action Council for Minorities in Engineering Inc. Noting that there are 165 business-sponsored and university-sponsored pre-college programs for minorities in engineering across the country, Toppin said Cornell's inclusion of the best of many of those programs "makes assimilation at a major white university — and therefore academic success — a lot more likely."

The high school program, dubbed "Minority Youth & Students Exploring Avenues in Technology," began its first phase on July 31. That day, 22 black high-school sophomores from Rochester, Binghamton, Elmira and Ithaca arrived at Cornell for a two-week program that teaches core courses in science and English, study skills, and exposes the students to the people and world of engineering.

The students, whose grades range as low as C's but who were identified as having a high science aptitude and desire to succeed, are spending two weeks at the College of Engineering this year and the next two summers, and will return to Cornell for monthly training on Saturdays during the school year. They also will have continued contact throughout high school with professional engineers or Cornell faculty members who will serve as mentors and counselors.

The students also will hear talks by black scientists and engineers who can serve as role models. For example, one wind-up speaker in this first session — on Aug. 9 — will be Air Force Col. Frederick D. Gregory, a black astronaut.

Each spring, the participants will enter projects in science fairs to be judged by their high school teachers and Cornell professors. The three students with the best projects will have cash incentive payments deposited into an escrow scholarship account for participants who end up as Cornell engineering students. Such incentive payments will also be deposited for every A grade that the students receive in high school math, science or English.

"Too many people have accepted the idea that there's no pool from which to train the black engineers of the future," said Judy Jackson, the assistant dean of engineering for minority programs. "We said that's ridiculous. We went aggressively into five high schools and we asked guidance counselors for kids with aptitude. We talked to every kid who had the potential and chose those who also had the



Judy Jackson

Jill Peltzman

desire to reach their potential. Then we talked to their parents."

Starting next year, new cycles of the same program will begin for youngsters who have just finished seventh and eighth grade. All three "classes" will be at the college concurrently.

On Aug. 23, the engineering college will welcome a different group of minority students — Hispanics as well as blacks — to another effort, called "The Foundations Program," for regular matriculating freshmen in the college. These students, too, must have the ability for the work and must fulfill standard requirements for a Cornell engineering degree, but they will be allowed three years to do the work that is ordinarily done in two.

Jackson also formed an active partnership among Cor-

nell, the schools and their counselors and principals, the parents, and a number of central New York businesses. The business firms supply mentors, invite students to visit their operations, and give money and in-kind support to Jackson's programs.

International Business Machines Corp., one of the supporters, also loaned her John Corning, who, after 25 years in IBM management, is spending two years helping Jackson develop these two and other programs.

Jackson, 39, universally called "J.J.," is a soft-spoken but intense administrator who often starts work at 6:30 in the morning and occasionally works till 1 a.m. When she came to Cornell from Bucknell University three years ago, she brought a vision of what has since become reality.

"I had the basic plan worked out for Bucknell," she recalled. "The faculty liked it, and so did the president; but he decided he didn't want to get into pre-college programs. When I came here and met Bill Streett [dean of engineering], he said: 'Where have you been all my life?'"

Jackson sees the program as two-staged: aggressive recruitment finds the black students others despair of finding, and continuity allows good intentions to bear fruit.

"You've got to start early, work continuously and make connections," she said, adding: "When a kindergarten kid gets accolades for excellence, the graduate schools ought to stand up and applaud."

Jackson says the programs attack two critical national problems — underproduction of engineers and a minority population that is growing rapidly but not gaining the education needed to master the jobs they will be called on to fill.

"This means leadership jobs, too," she said. "With white population growth slowing and minority rates surging, America must find the ways to develop leaders out of these groups. That means beginning early to teach kids to dedicate themselves."

In both the pre-college summer program and the new freshman program, the minority students are treated like all other students with regard to ability and required achievement, said Jackson. However, at the same time, they are continually tested and counseled to keep study skills sharp and morale high. There is also a sustained effort to keep before the student's eye the real world of engineering, she said.

"Recruiting is certainly important, and no doubt many people in education have written off black kids when it comes to the hard sciences and engineering," Jackson says. "But even when the kids have been recruited, considerably lower percentages make it through to graduation. We know the kids with talent and desire are there, and we intend to see that they make it through."

— Sam Segal

Northeast still experiencing mild drought despite heavy rains, climatologist says

With 2 to 5 inches of rainfall over much of the Northeast during the past two weeks, the intensity of dry spells is beginning to wane, much to the relief of farmers and home gardeners, according to a Cornell climatologist.

Keith L. Eggleston, assistant director of the federally funded Northeast Regional Climate Center at Cornell, said that recent heavy rainfall has alleviated the drought markedly, but the region still is having a "mild drought."

"We will need two to three inches of rain during the next few weeks to break the drought for good," he said. Eggleston is a research support specialist in the Meteorology Unit of the Department of Agronomy.

Still suffering from an "extreme drought" are parts of Maryland and Delaware, and the situation in northern Maine, northern New Hampshire and southern Connecticut is "severe," according to Eggleston.

"The rest of the region, including most of New York State and New England, is now having a mild drought," he said. However, the condition in the Adirondacks, the metropolitan area of New York and Long Island is "moderate."

The immediate weather outlook is not too promising for rain, Eggleston said. Based on the latest report from the National Weather Service in Maryland, Eggleston said that

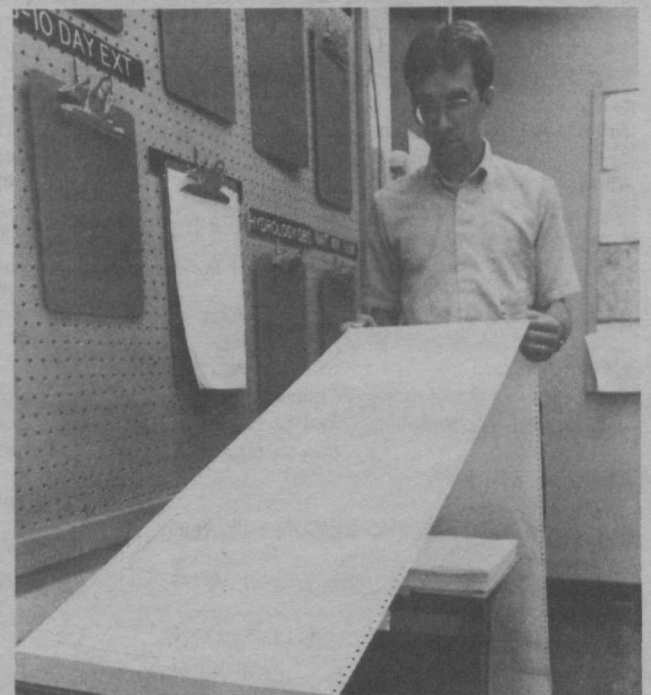
it will be warmer than normal with below-normal precipitation in the Northeast during the next few weeks through the middle of August.

Earlier, Eggleston warned that the Northeast was beginning to experience a moderate to extreme drought, which he called the worst since the region had several years of a prolonged dry spell in the mid-1960s.

During May and June, much of the Northeast received less than 70 percent of the normal precipitation, he reported. The region as a whole normally receives 5 to 7 inches of rain during the same period. The large percentage of the precipitation deficit occurred in June, when some locations received less than one inch of rain.

As of July 15, the southeastern section of New York State and southern Connecticut were the hardest hit. Parts of New York State and southern New England, including Connecticut, Massachusetts and Rhode Island, were having a drought equivalent or worse than that encountered in 1985. Areas having only a mild drought in mid-July were the coastal areas of Maine, central Massachusetts, the Lake Champlain Valley of Vermont and parts of western New York through the St. Lawrence River Valley.

— Yong H. Kim



Jill Peltzman

Climatologist Keith L. Eggleston examines weather maps transmitted by the National Weather Service.

Public speaking topic of seminar given by Hotel School administrator

Fred Antil, director of corporate relations and placement in the School of Hotel Administration, conducted a professional seminar on public speaking on July 31 preceding the annual convention of the International Platform Association (IPA) in Washington, D.C.

Newspaper columnist Jack Anderson is president of the IPA, which traces its foundation back to Daniel Webster and is the oldest public speaking organization in the United States.

"The way people learn to speak is by speaking and then getting feedback on their performance," said Antil. "At my seminar last year, two or three pro-

fessional actors and speech consultants spotted weaknesses in their own deliveries that they had not previously noted."

Seminar participants speak before a video camera. The tape is played back, and instructors point out speech weaknesses when they appear on the screen. Taping sessions are repeated until the speaker understands each delivery flaw.

Antil, a member of the board of governors of the International Platform Association, also was asked to introduce the guest speakers at the IPA's annual convention, Aug. 1-5.

Four firms to support graduate students in program in manufacturing engineering

Four of the nation's top companies have provided \$91,000 to support five graduate students in manufacturing engineering here during the 1988-89 academic year.

The firms are Apple Computer Inc., AT&T Technologies Inc., Emerson Electric Co. and General Motors Corp.

Four students in the Cornell Manufacturing Engineering and Productivity Program (COMEPP) will receive awards to cover tuition and fees plus winter and summer stipends. A fifth student, Nandakumar Santhanam, Madras, India, a senior doctoral student in the Sibley School of Mechanical and Aerospace Engineering, will receive a one-time COMEPP Honors Fellowship.

The four firm-sponsored fellowships, which include supplementary funds from academic units and faculty grants, total

about \$26,500 each. They are:

- The AT&T Fellowship; Clifton Richardson, of Bishopville, S.C., as a doctoral candidate in the School of Chemical Engineering.

- The Apple Fellowship; Kevin Hendricks, of Lewistown, Pa., who is working for a doctoral degree in manufacturing systems design in the Johnson Graduate School of Management.

- The General Motors Fellowship; Antoinette Maniatty, of Allentown, Pa., who will enter the School of Mechanical and Aerospace Engineering as a doctoral candidate in the fall.

- The Emerson Fellowship; Mark Zaleski, of Jamesport, N.Y., who will become a doctoral candidate in the fall in the School of Mechanical and Aerospace Engineering.

Canyon krill may be key to rich fishing at Georges Bank

Dense krill populations in submarine canyons off Georges Bank in the Atlantic Ocean may be helping sustain what is one of the world's most productive fishing grounds.

Studies of the shrimp-like crustaceans by biologists from Cornell and Woods Hole Oceanographic Institution point to the deep-water organisms as a seasonal source of food for commercially important fish.

"There's not enough zooplankton and other food at Georges Bank to support all the squid, cod, flounder, haddock, hake, pollack, redfish and other species found there," said Charles H. Greene, a Cornell biological oceanographer. "We think the fish may be feeding intensively in the submarine canyons and other deep waters surrounding the bank."

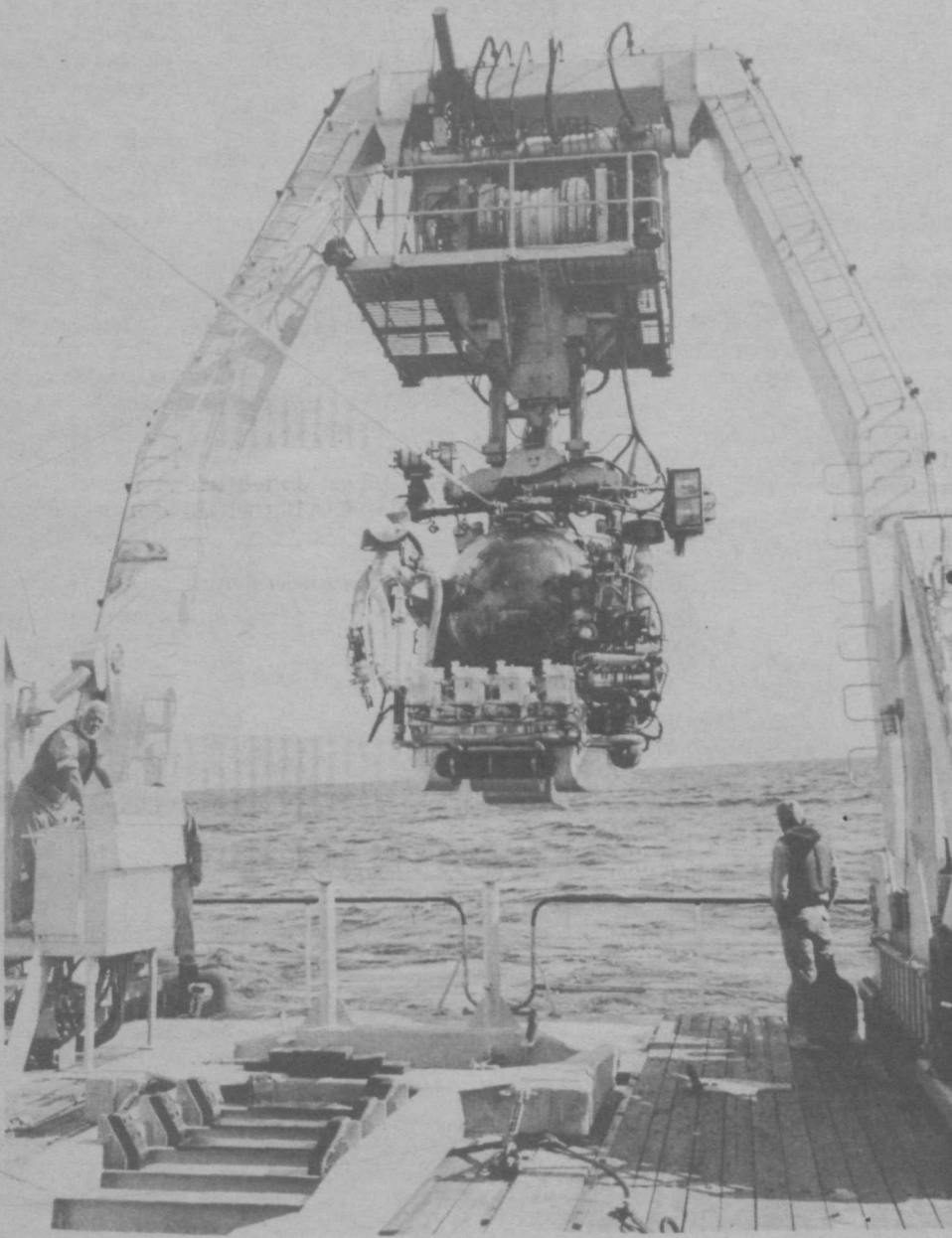
Biologists now are calling for more extensive exploration of krill populations in underwater canyons off the East Coast, including those that are accumulating wastes dumped from New York City.

Greene and Peter H. Wiebe of Woods Hole, using high-frequency sonar from a submersible, found 100 to 1,000 times more krill than they had expected in canyons east of southern New England.

The discovery of the high levels of krill was reported in the July 15 issue of the journal *Science* by Greene, an assistant professor of ecology and systematics here; Wiebe, chairman of Woods Hole's biology department; Janusz Burczynski, an engineer for BioSonics Inc.; and Marsh J. Youngbluth, a senior scientist at Harbor Branch Oceanographic Institution.

The biologists now are calling for more extensive exploration of krill populations in underwater canyons off the East Coast, including those that are accumulating wastes dumped from New York City.

Krill is the collective name for a group of crustaceans, known also as euphausiids, that range in size from a fraction of an inch to an inch-and-a-half in length. Whalers first coined the term krill, and these animals are known to be important food for baleen



The submersible Johnson Sea Link is lowered from the R.V. Seward Johnson for a dive that found surprisingly high densities of krill in the Atlantic.

whales and many species of fish.

Georges Bank is a relatively shallow area of the Atlantic off the New England coast. To the south are the deep waters of Atlantis Canyon, Hydrographer Canyon and

Oceanographer Canyon.

In September 1987, the Johnson Sea Link, a submersible from Harbor Branch Oceanographic Institution's R.V. Seward Johnson, dove to depths of 800 meters in

these canyons to test a new dual-beam sonar system.

In dual-beam sonar, sound energy is transmitted into the water, reflected off targets and received by two elements — one narrow-beam and one wide-beam — in the instrument. The technique allows operators to determine where, within the beam, animals are located.

The biologists and engineers were testing the instrument's ability to inventory sea life according to size, and were analyzing echoes returning from masses of tiny animals called zooplankton and from various kinds of krill when they found many more krill, especially of the species *Meganyctiphanes norvegica*, more than expected.

Depending on time of day and water depth, the biologists recorded canyon-dwelling krill in densities of more than 1,000 animals per cubic meter. The only previous reports of such dense krill masses were during surface breeding, Greene noted.

"These densities [that we discovered] are two to three orders of magnitude greater than the highest densities that we estimated in the upper part of the water column," the researchers reported in *Science*. The observations at various depths and times from the submersible also provided the most striking evidence so far of a remarkable feature in the behavior of krill: The tiny animals migrate vertically, travelling hundreds of meters each day to feed at night near the ocean surface. During the day, Greene explained, krill stay deep to avoid fish and other surface predators that require daylight to hunt visually.

The daily migration of krill — several thousand times their body length — is the equivalent of humans swimming miles for dinner, Greene commented.

The discovery of dense populations in three East Coast submarine canyons is only "circumstantial evidence" and not conclusive proof of the crustaceans' role in balancing the energy budget of Georges Bank, Greene emphasized, adding, "This may explain something we don't understand about marine ecosystems that is of profound importance to commercial fisheries."

The canyon studies were supported by the Oceanic Biology Division of the Office of Naval Research and the National Oceanic and Atmospheric Administration's National Undersea Research Program.

—Roger Segelken

Woodchuck hepatitis, liver cancer study gets \$8.9 million

Veterinary studies of the link between hepatitis B virus and liver cancer will be accelerated with a \$8.9 million National Institutes of Health grant to a research group led by Dr. Bud C. Tennant.

The grant will fund research using the common woodchuck as the animal model for hepatitis B in humans. Some 250 million people in China, Southeast Asia, tropical Africa and elsewhere are chronic carriers of the hepatitis B virus, which is transmitted to infants from infected mothers. Worldwide, about 300,000 people a year die from liver cancer. In the United States, about 3,500 infants a year are born to hepatitis-infected mothers and are therefore at high risk.

"Although only a few viruses actually have been shown experimentally to cause cancer, viruses may be far more important in carcinogenesis than is now recognized," said Tennant, a professor of veterinary clinical science and a specialist in liver diseases. His laboratory was the first to demonstrate that woodchuck hepatitis virus induces formation of liver tumors in woodchucks.

"The woodchuck appears to have great promise for development of practical methods for the control and prevention of viral hepatitis and liver cancer," Tennant said, noting the biological and genetic similarity of the viruses for hepatitis B in humans and in woodchucks. "Its ultimate value as an animal model, however, may be in enhancing our understanding of the key molecular genetic events that are fundamental in the process of carcinogenesis."

So far only a few other viruses are strongly linked to cancers, including the Epstein-Barr virus in Burkitt lymphoma and the papilloma virus in cervical cancer.

Tennant's work with the animal model began after researchers in Philadelphia about 10 years ago observed unusually high rates of liver cancer in captive woodchucks. Until then, scientists had trouble studying the hepatitis B virus because it could not be grown in tissue cultures and

because most mammals are not susceptible to it.

"If the cycle of neonatal infection can be broken with a vaccine and the chronic carrier state can be prevented, we could literally vaccinate against a human cancer and prevent it," explained John L. Gerin, a Georgetown University microbiologist and a close collaborator with Tennant in the woodchuck studies. "This has never been done before."

Currently, thousands of Asian and African infants — as well as other high-risk populations including infants of infected mothers in the United States — are receiving a costly vaccine early in life to prevent hepatitis B. Although the vaccine has been proven safe and effective against hepatitis B virus infection, scientists will not know for decades whether it will prevent liver cancer.

In the fast-growing woodchucks, Tennant's goal is to test vaccine strategy against viral hepatitis and liver cancer, in hopes of validating the approach and improving methods of vaccinating high-risk human populations.

"We're also strongly committed to developing a therapeutic approach to cure the 250 million chronic hepatitis B virus carriers of the infection," Tennant said. A major thrust of the future research here will be to test new antiviral drugs for their ability to inhibit viral replication and facilitate recovery.

The implications of the Cornell work, however may go even beyond the millions of people with hepatitis B virus infection. The woodchuck and human hepatitis B viruses are very simple organisms with probably no more than four genes. They provide, therefore, relatively simple systems to examine the molecular mechanisms that initiate or promote development.

The \$8.9 million grant to examine in depth the role of the hepatitis B virus infection in hepatitis and liver cancer and to improve methods of combatting these disease is from the NIH Institute of Allergies and Infectious diseases.

—Susan S. Lang



David Grunfeld

Research support specialist Donna Thompson prepares a subject for studies of the link between hepatitis B and liver cancer.

Cornell
CHRONICLE

This is the last issue of the Cornell Chronicle for the 1987-88 academic year. For the next two weeks, the paper will be on vacation. Publication will resume on Aug. 25 for 1988-89.

Job Opportunities, prepared by the Office of Human Resources, will be published on Aug. 11 and 18 and will be distributed as it usually is on weeks when there is no Chronicle.

CALENDAR

All items for the 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, Ithaca, NY 14850.

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 Folkdancers

The Cornell community and the general public and beginners are welcome to join in folkdancing. Admission is free, unless stated otherwise.

Instruction and request dancing, Aug. 7, 14 and 21, 7:30-10:30 p.m., Memorial Room, Willard Straight Hall.

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. Call 255-6464 for further information.

"Knots and Nets," featuring more than 70 works that trace the use of knots and nets from functional and ceremonial objects of the 18th, 19th and 20th centuries to contemporary art objects of unexpected form and scale, through Sept. 25. Works by well-known crafts artists Joanne Segal Brandford, Tim Harding, Diane Iiter, Rebecca Medel, John McQueen and Jane Sauer are on display.

FILMS

Unless otherwise noted, films are sponsored by Cornell Cinema. An (*) indicates that admission is charged.

Thursday, 8/4

"The Deer Hunter" (1978), directed by Michael Cimino, with Robert DeNiro, John Savage, Meryl Streep and John Cazale, 8:30 p.m., Uris.*



Friday, 8/5

"Three Men and a Cradle" (1986), directed by Coline Serreau, with Roland Giraud, Michel Boujenah and Andre Dussolier, 7:15 p.m., Uris.*

"Holiday" (1938), directed by George Cukor, with Katherine Hepburn and Cary Grant, 9 p.m., Anabel Taylor.*

"This is Spinal Tap" (1984), directed by Rob Reiner, with Christopher Guest, Michael McKean and Rob Reiner, 9:45 p.m., Uris.*



Saturday, 8/6

"Three Men and a Cradle," 7:15 p.m., Uris.*

"Holiday," 9 p.m., Anabel Taylor.*

"This is Spinal Tap," 9:45 p.m., Uris.*

Sunday, 8/21

"M" (1931), directed by Fritz Lang, with Peter Lorre, Ellen Widman and Otto Wem-icke, 8 p.m., Uris.*

Monday, 8/22

"The Gold Rush" (1925), directed by Charles Chaplin, with Charles Chaplin, Mack Swain and Georgia Hale, 8 p.m., Uris.*

Tuesday, 8/23

"The Harder They Come" (1973), directed by Perry Henzell, with Jimmy Cliff, Janet Barkley and Carl Bradshaw, Time to be Announced, Uris.*

"The Lady Vanishes" (1938), directed by Alfred Hitchcock, with Margaret Lockwood, Michael Redgrave and Dame May Whitty, TBA, Uris.*

Wednesday, 8/24

"Rashomon" (1950), directed by Akira Kurosawa, with Toshiro Mifune and Machiko Kyo, TBA, Uris.*

MUSIC

Bound for Glory

Bound for Glory will play records from the studio Aug. 7, 14 and 21. The show can be heard from 8 to 11 p.m. on WVBR-FM93.

Summer Session

Jazz pianist Oliver Jones will give a concert on Aug. 4, 8:15 p.m., in Barnes Hall auditorium.



Jazz pianist Oliver Jones will give a concert on Aug. 4 in Barnes Hall.

The Ithaca Opera Association will present Elizabeth Swados' "Nightclub Cantata," as part of the Summer Session Performing Arts Series, Aug. 5, 8:15 p.m.

RELIGION

Sage Chapel

Beverly A. Moore-Tasy, assistant director, Cornell United Religious Work, will be the speaker for the Aug. 7 interfaith service, beginning at 11 a.m. in Sage Chapel.

Catholic

Mass: Every Saturday, 5 p.m., every Sunday, 10 a.m., Anabel Taylor Auditorium.

Daily Masses will be announced on a weekly basis.

Christian Science

Testimony Meeting: Every Thursday, 7 p.m., the Anabel Taylor Founders Room.

Episcopal (Anglican)

Every Sunday, 9:30 a.m., Anabel Taylor Chapel.

Friends (Quakers)

Worship will be at the Hector Meeting House, Perry City Road, at 10:30 a.m. Rides available in Anabel Taylor parking lot at 10 a.m.

Jewish

Conservative/Egalitarian Services: Friday 7:30 p.m., Saturday 10 a.m., Anabel Taylor Hall Founders Room.

Orthodox Shabbat Services: Saturday 9:15 a.m., Anabel Taylor Edwards Room Young Israel, 106 West Ave. Call 272-5810 for time.

Korean Church

Every Sunday, 3 p.m. Anabel Taylor Hall.

Muslim

Sunday through Thursday, 1 p.m., 218 Anabel Taylor Hall. Friday 1 p.m. Anabel Taylor Edwards Room.

Protestant

Protestant Cooperative Ministry: Every Sunday, 11:15 a.m., Anabel Taylor Chapel.

Baptist Campus Ministry (SBC): Every Tuesday, 7:30 p.m., Anabel Taylor Chapel.

Zen Buddhism

Zazen meditation: Tuesdays at 7 p.m., Edwards Room, Anabel Taylor Hall. Every Thursday 5:10 p.m., Anabel Taylor Chapel. For more information or to arrange beginner's instruction, call Ian Dobson at 277-4364.

SEMINARS

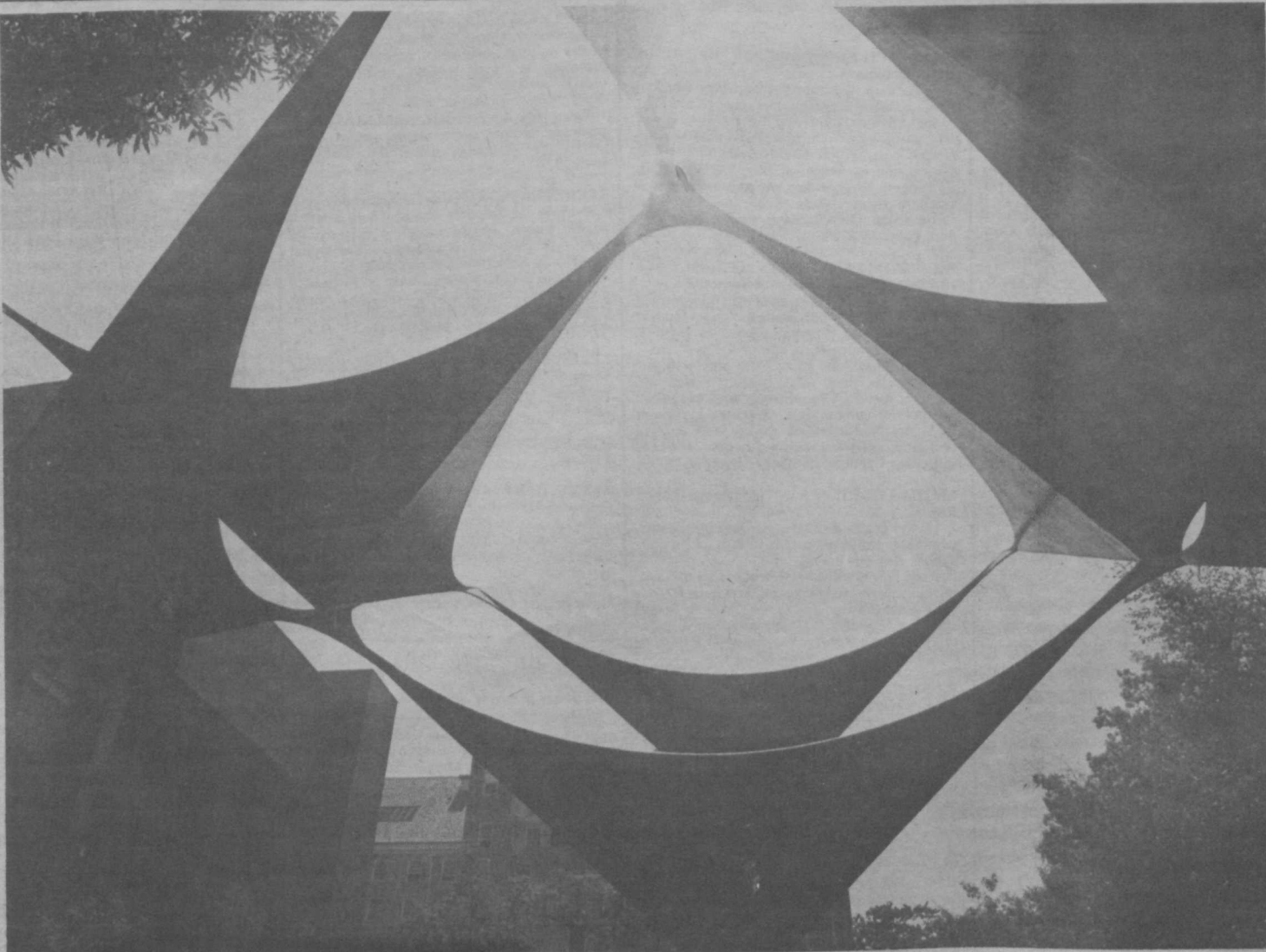
Summer Session

"Honey Bee Swarm Orientation," Roger A. Morse, chairman of the department of entomology, Aug. 4, noon, 213 Ives Hall.

MISC

Cornell Plantations

"Foods That Feed the World," a family educational event featuring the staple food of the world, Aug. 13, 1-5 p.m., Cornell Plantations, One Plantations Road. Children must be accompanied by an adult, \$2 or \$6 for a family. For more information call 255-3020.



Jill Peltzman

This red-and-white triangle sculpture behind Van Rensselaer Hall was made in 1983 by students in Professor Francis Saul's metal sculpture class in the Department of Architecture. The professor is now emeritus and the course no longer exists.

Job Opportunities

In compliance with the Immigration Reform and Control Act of 1986, Cornell University is now required to check the identity and employment eligibility of all new hires.

Effective June 1, 1987, if you accept a position, you must show documents on or before your first day of work, that indicate your identity and employment eligibility; for example, a state issued driver's license and a birth certificate. For more information, contact Staffing Services, 255-5226.

-DURING THE SUMMER, JOB OPPORTUNITIES WILL BE PRINTED SEPARATELY ON AUGUST 11 & 18. THE CORNELL CHRONICLE RESUMES ITS WEEKLY SCHEDULE AUGUST 25.

-Interviews are conducted by appointment only.

-Send cover letters & resumes to Staffing Services, 160 Day Hall, Cornell University, Ithaca, NY 14853.

-Employment & employee transfer application forms are available at both Staffing Services locations-160 Day Hall & East Hill Plaza.

-Requests for referral &/or cover letters are not accepted unless specified in the ad.

-Cornell University is an Affirmative Action/Equal Opportunity Employer.

-This listing is also available on CUINFO. Terminals are situated in main lobbies of Day Hall & Gannett Clinic, & the Olin, Mann & ILR Libraries.

-DEPTs.-Deadline for submission is noon on Thursday for following week's Job Opportunities.

-Minimum salaries listed are for recruitment purposes only.

-S=Statutory; E=Endowed

Administrative and Professional

COMP. TECH. AD. II (PT2918) Computer Svcs.-E

Assist faculty in developing instructional software & documentation for use w/microcomputers; act as technical info. source about IBM PCs & software; supv. hiring & work of student programmers.

Req.: BS or equiv. w/coursework in computing or related field. 3-5 yrs. exp. in computing w/2 yrs. exp. prgrmg. computers. Microsoft windows exp. desir. In-depth knowl. of design & prgrmg. concepts. Fluent in 2 prgrmg. langs., pref. Pascal, C, Fortran or Macro assembly. Awareness of microcomputers database, spreadsheets & WP programs. Good oral/written comm. skills. Letter & resume to Judi Baker by 8/19.

SYSTEMS PROGRAMMER/ANALYST III (PT2907) Theory Center-E

Provide UNIX systems support, incl. parallel systems support, for various Theory Ctr. computers in Advanced Computing Facility (ACF) & CU Nat'l. Supercomputer Facility (CNSF).

Req.: BS Comp. Sci. or equiv. comb. of ed. & exp. 3-5 yrs. exp. w/& understanding of UNIX & UNIX-based tools; exp. w/multiple machine architectures; familiar w/parallel systems helpful; strong comm. skills. Letter & resume to Judi Baker by 8/12.

DIRECTOR, NOYES CENTER (PA2904) Unions & Activities-Noyes Ctr.-E

Overall resp. for supv. & maint. of Noyes Student Ctr. Supv., hiring & trng. of staff. Resp. for prep. & analysis of operating budget. Strategic & long-range planning for dept. & unit is critical.

Req.: BA; Advanced degree pref. 3-5 yrs. relevant exp. Solid exp. in operations, personnel & financial mgmt./supv. essential. Proven exp. in student development & prgrmg. expected. Knowl. of computers (IBM PC XT) pref. Letter & resume to Cynthia Smithbower by 8/15.

DIRECTOR OF ALUMNI AFFAIRS & DEVELOPMENT (PA2903) Human Ecology Alumni Affs.-S

Plan & direct fund raising & alumni affairs efforts for College of Human Ecology. W/Central Development Off. staff, identify, cultivate & solicit college support among alumni & friends. Oversee alumni relations activities as implemented by Asst. Dir., Alumni Affairs.

Req.: BA; Min. 3 yrs. fund raising & alumni affairs or equiv. exp. Exc. comm., managerial, interper. & org. skills req. Letter & resume to Cynthia Smithbower by 8/12.

FACILITY SUPERVISOR (PT2917) NYSSILR-S

Mng. operations of ILR Student Computer facility. Hire & supv. student operators. Maintain computers, prep. software; act as gen'l. consultant for ILR course work. Maintain & set up networks for IBM & Mac computers.

Req.: BS or equiv. Exp. as computer operator desir. Good interper., comm. & org. skills. Knowl. of CU computer system. Some exp. w/CMS & TOPS-20. Knowl. of micros., Mac & IBM PC. Knowl. of popular applications pkgs. such as Dbase, Lotus 123. Some exp. w/network or file server. Letter & resume to Judi Baker by 8/19.

RESEARCH SUPPORT SPECIALIST II (PC2904) NYSSILR-Catherwood Library-Rochester/Utica-S

Work w/Dir., LMDC & local advisory comm.; survey labor unions in Rochester or Utica/Rome area willing to cooperate w/VanArsdale Labor History Project. Visit union, survey materials & gather info. Prep. draft historical essays, complete survey forms. Advise staff, manage files & preserve records.

Req.: Min. BA in ILR. Adv. degree w/labor history concentration pref. or equiv. exp. Archival exp. &/or course work, knowl. of AMC format highly desir. Willing to relocate to survey area. Letter & resume to Michele Draiss, 235 Olin Hall.

EXECUTIVE STAFF ASST. (PC2915) Ctr. for Environmental Research-E

Resp. for routine admin. of ERC, provide support to admin. Assist w/budget mgmt. Manage workloads to meet multiple deadlines, act as liaison among ERC staff, assist w/writing & editing tasks.

Req.: BS or equiv. Some sci. bkgrnd. Min 3-5 yrs. admin. exp. Editing scientific manuscripts.

Micro. skills. Letter, resume, & writing sample to Esther Smith by 8/12.

ASST. REGIONAL DIRECTOR (PA2906) Public Affairs Reg'l. Offs.-E

Implement a program of admissions for region under direction of Dir., Metro New York Reg. Off. & Sr. Assoc. Dir. of Admissions; act as Exec. Dir. for CU Alumni Assoc./NYC.

Req.: BA/BS pref. from CU. Exp. working w/ volunteers. Computer knowl., especially Lotus 123 & Wordperfect. Exc. comm. & org. skills. Letter & resume to Cynthia Smithbower by 8/11.

ADMINISTRATIVE MANAGER I (PA2905) Rural Sociology-S

Coord. & supv. personnel & busn. aspects of dept.; assist in research & prep. of operating budgets; maintain fin. accts. & records; coord. processing of p/r actions; monitor budget expenditures; maintain personnel records; complete special reports & projects assigned by Chairperson.

Req.: BA/BS or equiv. exp. 3-5 yrs. admin. exp. Familiar w/microcomputers & database mgmt. helpful. Strong org. skills. Knowl. of CU acctg., grants & contracts, admin. personnel & procedures highly desir. Letter & resume to Cynthia Smithbower by 8/11.

DIRECTOR OF NETWORKING (PA2802) Information Technologies (CCS)-E

Coord. policy, planning & development & implementation of CU's networking strategy. Plan, propose & implement/maintain campus-wide admin., academic & libr. networking efforts. Coord. CU representation to nat'l. networking forums.

Req.: MA in info. tech. or related field. Min. 5 yrs. mgmt. exp. in academic setting. Record accomplishment in advanced networking. Letter & resume to Search Committee: Dir., Networking by 8/5.

SR. TECHNICAL CONSULTANT (PT2807) Computer Svcs.: Academic Computing-E

Provide high-level stat. computing support svcs. through teaching, consulting & evaluating software. Support related research computing applications, incl. stat. graphics & database systems.

Req.: MS or equiv. in stat. or related discipline. 3-5 yrs. exp. as stat. computing consultant; expert in mainframe & microcomputer stats. software use. Letter & resume to Judi Baker by 8/12.

APPLICATIONS PROGRAMMER III (PT2812) Operations Research & Industrial Engr.-E

Develop & maintain simulation pkg. for mfg. operations.

Req.: BA. Knowl. of computer graphics, C, Pascal & UNIX. Letter & resume to Judi Baker.

SYSTEMS PROGRAMMER ANALYST (PT2813) Computer Science-E

Design & implement systems supporting large research project. Prgrmg. incl. solid modeling, simulation, graphics, realtime control, user interfaces & artificial intelligence.

Req.: BS in comp. sci. or math, or equiv. 3-5 yrs. related exp. Strong bkgrnd. in geometry, knowl. of large, complex systems (LISP & C). Exp. w/3-dimensional computer graphics, solid modeling; complex LISP system. Knowl. of kinematics dynamics. Advanced grad. work in research desir. Letter & resume to Judi Baker.

RESEARCH SUPPORT SPEC. III (PT2805) Vet. Pathology-S

Mng. daily operations of oncology lab; long range planning & execution of research activities.

Req.: MS or equiv. req. 3-5 yrs. exp. in protein purification tech. (gel electrophoresis, gel filtration, ion exchange, affinity, electrophoresis, ELISA, etc.) monoclonal antibody techniques & standard tissue culture procedures; knowl. of recombinant DNA techs. Letter & resume to Judi Baker by 8/12.

SR. COMPENSATION ASSOCIATE (PA2806) Office of Human Resources-E

Under gen'l. direction, assist in development & admin. of Univ.'s non-academic compensation (wage & salary) programs. Assist in supv. & mgmt. of Compensation office.

Req.: BA/BS or equiv. MS pref. 4-6 yrs. related exp. incl. classification/evaluation. Familiar w/FLSA req. Strong org., analytical, interper. & comm. skills. Working knowl. of PCs, database mgmt. & spread sheet analysis pref. Stat. analytical skills highly desir. Letter & resume to Cynthia Smithbower by 8/12.

MEDIA COORD. (PA2807) Mathematical Sci. Inst.-E

Under gen'l. direction of Admin. Assoc., administer Institute's comm. efforts, incl. publications & media coord.

Req.: BA/BS. 4-6 yrs. recent exp. in media & publicity. Strong scientific/mathematical & writing bkgrnd. Exc. comm. (verbal/written) & org. skills req. Familiar w/micro-computer & desktop publishing software req. Letter & resume to Cynthia Smithbower by 8/12.

PROJECT MANAGER II (PT2823, PT2824) Cooperative Extension-S

Provide leadership for development of PRO-DAIRY curriculum dealing w/production systems (soil, crop, dairy) & mgmt. of dairy farm busn. Participate in development of statewide educat'l. program improving mgmt. orientation & skills of dairy farm mgrs. & of NY dairy industry.

Req.: MS pref. or coursework demonstrating strength in farm busn. mgmt. 3-5 yrs. related exp. req. Demonstrated skills in delivery of dairy farm mgmt. program. Exc. writing & oral skills in comm. Letter & resume to Judi Baker by 8/12.

EXECUTIVE STAFF ASST. (PC2816) JGSM-E

Provide operat'l. support for dept. Manage financial transactions, internal & external reporting; receive & route srvc. clients; order supplies & equip. & handle corresp. & comm. for dept. staff.

Req.: AAS or equiv. Familiar w/CU purchas-

ing, acctg., psnl. practices. Exp. w/automated offc. systems helpful. Letter & resume to Esther Smith by 8/5.

ADMIN. MANAGER (PA2801) Finance & Business Svcs.-S

Produce financial reports for stat. college & Univ. acctg. records; assist in budget development & execution & generate financial analyses.

Req.: BS in busn. admin. 2-3 yrs. related exp. Micro-computer, Lotus/Symphony & System 36 skills nec. Understanding of State Finance & Ed. Laws desir. Letter & resume to Cynthia Smithbower by 8/5.

HEALTH EDUCATOR (PA1905) Health Svcs.-E

Plan, develop, coord. & evaluate outreach programs on a variety of sexual health topics. Incl. coordinating Peer Sexuality Ed. program, provide in-srv. trng. & assist Dir., Health Ed.

Req.: MS, health ed., public health, community ed. or related field. 2-3 yrs. exp. providing sexuality ed. programs in community setting. Must have exc. comm. (written/oral) skills. Exp. working w/college-aged men & women desir. Letter & resume to Cynthia Smithbower by 8/12.

FINANCIAL ANALYST II (PA2705) Asst. Treasurer-E

Provide analytical support in capital budgeting, investment analysis & project financing.

Req.: MBA pref. or BS w/5 yrs. financial analysis in business or univ. environ. Exp. w/spreadsheet programs (e.g. Excel or Lotus) req. Strong analytical & exc. comm. skills nec. Prior exp. making investment decisions & project development (analysis, design/implementation/maintenance) pref. Letter & resume to Cynthia Smithbower by 8/5.

RETAIL MGR. II (PA2704) Lab of Ornithology-E

Manage, oversee, coord. all aspects of Crow's Nest Bookshop. Maximize operation growth & profitability. Assist in marketing Lab programs.

Req.: BS in mktg., busn. mgmt. or equiv. exp. Proven ability to handle merchandising & catalogue operation. Catalogue & retail sales exp., plus advertising bkgrnd. nec. Prior exp. in overall enterprise mgmt. useful. Letter & resume to Cynthia Smithbower by 8/5.

Clerical

REGULAR EMPLOYEES Submit employee transfer application, resume & cover letter.

Career counseling interviews available by appt. **EXTERNAL APPLICANTS** Mail employment application & resume to 160 Day Hall. Interviews conducted at Staffing Services, East Hill Plaza by appt. only. Qualified applicants are contacted after materials are reviewed.

OFFICE ASST., GR16 (C2901) Dining Services-E

Serve as central Dining offc. recep./sect.

Req.: H.S. dip. or equiv. Min. 6 mths. clerical exp. Exc. org., interper. & comm. skills. Computer/WP skills. Med. typing. Min. Biweekly: \$448.50

STACKS ASST., GR16 (C2905) Olin Library-E

Maintain 1 floor of book stacks on Olin Lib. Shelf a large volume of materials; process incoming serials on a daily basis, maintain orderly academic environ. Staff libr. security desks. Mon.-Fri. 10 a.m.-6:30 p.m.

Req.: H.S. dip. or equiv. Familiar w/libr. & academic setting; some public service desir. Strong org. & comm. skills. Min. Biweekly: \$448.50

SECRETARY, GR17 (C2913) Anthropology-E

Provide sec. support for dept. main offc.; answer phone; handle incoming & outgoing mail; type classwork & corresp.; heavy typing particularly at beginning of semesters.

Req.: H.S. dip. or equiv.; busn. or sec. school pref. CU offc. exp. desir. WP pref.; good phone etiquette. Able to meet multiple deadlines. Heavy typing. Min. Biweekly: \$468.00

TELEPHONE OPERATOR, GR17 (C2911) Telecommunications-E

Provide caller related assist.; operate Telex when req.

Req.: H.S. dip. or equiv. CRT & keyboard skills req. Exc. interper. skills. Min. Biweekly: \$468.00

ACCTS. ASST., GR18 (C2908) Controller's/Endowed Acctg.-E

Provide assistance maintaining acctg. records & generating payments. Resp. for fin. data entry. Input large, continuous data volume, from a variety of input forms.

Req.: H.S. dip. or equiv. Data entry cert. highly desir. Exp. w/CU acctg. procedures pref. Work well w/variety of individuals. Attention to detail & accuracy meet multiple deadlines. Min. 1 yr. data entry exp. Heavy typing. Min. Biweekly: \$487.50

SEARCHER, GR18 (C2912) Olin Library-E

Under direction of Searching Coord., resp. for preorder & precatalog serial searching.

Req.: H.S. dip., BA or other post-secondary desir. Reading knowl. of 1 or more foreign language. Previous libr. exp. helpful. Lt. typing. Min. Biweekly: \$487.50

SERVICE REPRESENTATIVE, GR19 (C2914) Univ. Registrar-E

Prepare, certify & transmit official CU transcripts. Certify or validate, to ext. orgs., agencies or individuals, enrollment degree status or record of academic achievement of CU students.

Req.: AAS or equiv. Min. 1-3 yrs. related exp. req. Computer input exp. Exc. interper. & org. skills. Heavy typing. Min. Biweekly: \$510.90

SECRETARY, GR19 (C2917) Chemistry-E

Type tech. chem. manuscripts. Corresp. & data entry & prepare monthly billing for WP fac. Req.: AAS or equiv. Exp. using Wordperfect essential. Latex & Mac exp. helpful. Tech. typing exp. essent. Min. Biweekly: \$510.90

ACCTS. ASST., GR19 (C2909) Nuclear Studies-E

Under gen'l. supv. Perform payment & billing duties for large research unit.

Req.: AAS or equiv. Min. 1 yr. acctg. exp. Speed & high degree of accuracy, attention to detail req. Lt. typing. Min. Biweekly: \$510.90

SECRETARY, GR19 (C2604) Univ. Development-E

Provide sec. & admin. assistance to Office of Planned Giving. Prepare corres. & mailings; perform research; set up appts. & make travel arrangements; maintain records & prepare gift reports.

Req.: H.S. dip. or equiv. Exc. sec. skills. Min. 1-2 yrs. work exp.; bookkeeping/acctg. exp. desir. Good org. & interper. skills. Med. typing. Min. Biweekly: \$510.90

ADMIN. AIDE, GR19 (C2602) East Asia Program-E

Advise fac., grad. & undergrad. stud. about opportunities related to East Asia. Maintain up-to-date info. Coord. publicity & arrangements for Program events & activities. Serve as liaison between Program & gen'l. public. Assist Exec. Staff in variety of activities.

Req.: AAS or equiv. Strong interper., comm. & org. skills, esp. the ability to comm. effectively w/fac. & grad. stud. 1-2 yrs. exp. in academic setting pref. Knowl. of PC systems & Wordperfect desirable. Med. typing. Min. Biweekly: \$510.90

TECH. SALES ASST., GR20 (C1919) Campus Store-E

Provide customer srvc. leading to sales of computer software, publications & supplies. Demonstrate variety of software, process mail-outs & dept. charges & coord. projects. Assist in development & implementation of computer inventory system, hardware rental program & new customer related offerings & svcs.

Req.: AAS in computer sci. or equiv. Some exp. pref. Able to operate microcomputers such as IBM-PC, Mac w/ or w/out hard-drives. Able to demonstrate applications software for same. Strong interper./comm. skills essential. Retail exp. pref. Letter & resume to Esther Smith by 8/15. Min. Biweekly: \$534.30

ADMIN. AIDE, GR20 (C2902) Natl. Astronomy & Ionosphere Ctr.-E

Provide admin. sec. assist. to NAIC, Research Park Fac.

Req.: AAS or equiv. Min 2 yrs. sec. exp. Tech. typing. Knowl. of microcomputer appl. essential. Knowl. of CU acctg. (endowed) essential. Exc. org., interper., & comm. skills. Able to work independ. Med. typing. Min. Biweekly: \$534.30

APPT./SCHEDULING SECRETARY, GR20 (C2920) Univ. Relations-E

Schedule & org. Vice President's calendar; maintain back-up materials for same; handle phone & some typing; develop/maintain filing system in an extremely fast-paced offc.

Req.: AAS or equiv. Med. typing. Min. 2 yrs. sec. exp. Knowl. of CU highly desir. Able to recognize & identify relationships & connections between & among people & info. in order to effectively & efficiently integrate calendar, phone & paper aspects of offc. Req. strong interper. & comm. (verbal) skills. Exceptional org. skills. Able to set priorities & work in a complex, active environ. Min. Biweekly: \$534.30

ADMIN. AIDE, GR20 (C2411) Univ. Development-E

Provide sec. & admin. asst. to Office of Major Gifts. Coord. flow & oversee completion of work; assist in making arrangements for visitors to campus; conduct research for special projects; type, edit & proofread corresp., reports, schedule appts. & coord. travel arrangements.

Req.: AAS or equiv. Significant exp. working in busy offc. w/considerable public contact. Able to work w/wide range of individuals. Exc. comm. (written/oral) skills. Able to deal w/confidential matters. Med. typing. Min. Biweekly: \$534.30

ACCTS. COORD., GR24 (C2510) Controller's/Endowed Acctg.-E

Acctg. for & prep. of finan. data in accordance w/ prescribed guidelines for sponsored grants & contracts; advise & assist CU depts. in finan. admin. of sponsored agreements; establish acctg., monitor expenditures & prep. monthly, quarterly & annual reports.

Req.: AAS in acctg. or equiv. BA desir. Min. 3-5 yrs. exp., 2 yrs. CU exp. desir. Knowl. of Lotus 123. Exc. comm. (written/oral) skills essential. Min. Biweekly: \$639.60

General Service

REGULAR EMPLOYEES Submit employee transfer application to Staffing Services, 160 Day Hall. Interviews conducted by appt. only. EXTERNAL APPLICANTS Mail employment application to Staffing Services, 160 Day Hall. Interviews conducted by appt. only. Qualified applicants are contacted after materials are reviewed.

CUSTODIAN, SO02 (G2901) Buildings Care-E

Provide gen'l. custodial care of bldgs. & grounds in immediate vicinity of assigned area. Mon.-Thur., 6 a.m.-2:30 p.m.; Fri. 6 a.m.-1:30 p.m.

Req.: H.S. dip. or equiv. Able to operate a variety of heavy power equip.; lift 50 lbs. & climb an 8 ft. ladder. Basic reading & writing skills. Min. hourly: \$5.49

Technical

REGULAR EMPLOYEES: Submit employee transfer application, resume & letter. **EXTERNAL APPLICANTS:** Mail employment appli-

August 4, 1988
Number 28
Office of Human Resources
Cornell University
160 Day Hall
Ithaca, New York 14853-2801

cation, resume, & list of lab techniques/equip., or computer software/hardware with which you are familiar. Submit letter per position, specify title, dept. & job number. Interviews conducted by appt. only. Qualified applicants are contacted after materials are reviewed. Backgrounds highly desired: biochem., chem., microbio., elect., physics, lic. animal health tech.

GROUNDWORKER, SO04 (T2903, T2904, T2905) Grounds-E

Perform routine manual tasks: turf mowing, snow removal, maintain. appearance & condition of grds., walkways & roadways. Outside work in all elements. Mon.-Fri., 7 a.m.-3:30 p.m.

Req.: H.S. dip. or equiv. Valid class 5 driver's lic. 1 yr. exp. Knowl. of hand. power tools & motorized equip. NYS Pesticide applicators cert. pref. Apply by 8/12. Min. hourly: \$6.25

LEARNING RESOURCE CENTER SUPERVISOR, GR19 (T2920) Nutril. Sciences-S

Maintain & supv. DNS Learning Resource Ctr. & assist w/undergrad. & course typing. Instruct & schedule users. 10 month position.

Req.: H.S. dip. or equiv. Exc. org., time mgmt., interper. & comm. skills. Previous exp. w/A-V equip. pref., not req. Computer exp. nec. Familiar w/Wordperfect pref. Previous offc./sec. exp. pref. Apply by 8/12. Min. Biweekly: \$510.90

TECHNICIAN, GR20 (T2911) Diagnostic Lab-S

Perf. microbiological & immunological tests on specimens for detection of (Johnes) MYCOBACTERIUM PARATUBERCULOSIS.

Req.: BS + lab. exp. in MICRO, or related field. NYS driver's lic. req. Basic bacteriology techniques nec. Apply by 8/12. Min. Biweekly: \$534.30

TECHNICIAN, GR20 (T2415) Vet. Pathology-S

Perform lab techniques & assist in development of assays & experiments to carry out scientific research in field of immunopathology & cellular bio. of autoimmune dermatosis. Maintain lab supplies & equip.

Req.: BS bio. sci. 2-3 yrs. related exp. Apply ASAP. Min. Biweekly: \$534.30

TECHNICIAN, GR20 (T2427) Agronomy-S

Assist in studies of plant membrane lipid metabolism using cell suspension cultures. Resp. incl. maint. of plant cell suspension cultures, isolation of cell membranes, biochem. assays, lipid isolation (TLC, HPLC) & some radioisotope work. Until 6/31/89.

Req.: BS in bio. or biochem. Some lab exp. pref. Exp. w/plant tissue cultures, biochem. assays, lipid analyses, radioisotope handling desir. Apply ASAP. Min. Biweekly: \$534.30

Graduate Bulletin

Fall 1988 registration: Aug. 22-26 from 8:15 a.m. to 4:15 p.m. in Sage Hall Lounge. Bring student ID card and registration admission form sent by the university registrar.

Course Enrollment: Students may bring completed and signed course enrollment forms to registration and complete course enrollment during the registration process. Forms will be available during registration week in campus mailboxes, graduate field offices and Sage Graduate Center. Enrollment will continue through Sept. 16.

English Placement Test: Aug. 22 at 11:45 a.m. in 106 Morrill Hall. All entering foreign students with a TOEFL score below 600 must take this examination.

Advance reported in gallium arsenide production process

A specially engineered compound that can react at low temperatures to yield gallium arsenide has been developed here.

The achievement offers the possibility of a low-temperature, non-toxic method of producing gallium arsenide for electronic components, the chemists reported in the July 15 issue of *Science*.

Despite its promise as the basis for high-speed electronic devices, gallium arsenide has proven a difficult substance to synthesize in a useful form. One major method of producing it involves depositing vapors of a gallium compound and a highly toxic arsenic-containing gas called arsine, at high temperatures. Toxicity, temperature control, turbulence, and the difficulty of maintaining correct ratios of the two components have prevented mass production of gallium arsenide components, although they have found important uses in supercomputers and other specialized electronics.

Normally, molecules with both gallium and arsenic atoms readily react to form pairs or chains. However, the Cornell chemists have synthesized a compound containing only one gallium and one arsenic atom linked to one another and surrounded by small attached molecular groups that "cushion" the gallium-arsenic pair from the effects of its neighbors.

Authors of the paper are graduate student Erin K. Byrne, visiting scientist Laszlo Parkanyi and assistant professor of chemistry Klaus Theopold.

The new "arsinogallane" molecule was designed so that, when reacted with butanol at room temperature, the cushioning groups are stripped from the gallium-arsenic core, yielding gallium arsenide. The chemists also have produced a similar compound with a core of indium phosphide, another substance useful in electronic devices.

"While the chemistry of this compound appears highly promising, it's still only a start toward molecules that are technologically useful," said Theopold.

Theory Center plans proposed to NSF include a second IBM supercomputer

A "Siamese twin" for its IBM supercomputer system, enhanced computer graphics equipment and data-storage banks that give instant access to any piece of data from whole libraries of scientific information are the key features of Cornell's six-year, \$111 million proposal to the National Science Foundation for continued support of the Cornell Theory Center.

NSF representatives visited Cornell June 21 as part of the process of deciding whether to continue federal funding for the center, whose official title is the Center for Theory and Simulation in Science and Engineering.

Theory Center administrators said the advanced systems are necessary because the current computer — an IBM 3090-600E with attached processors from Floating Point Systems, Inc. — has been overwhelmed by demand from researchers.

"The use of the 3090 by scientists has exceeded our expectations. There are now more than 1,600 scientists working on over 400 projects, and this demand has left no room for growth," said Larry Lee, director of the Cornell National Supercomputing Facility (CNSF) of the Theory Center.

According to Theory Center director Kenneth Wilson, "The Theory Center has shown extraordinary success in advancing a wide range of science and engineering.

This success shows that supercomputing represents a major new framework for research."

The technological centerpiece of the six-year Cornell proposal is a plan to link a second IBM 3090-600E supercomputer to the current one via a high-speed data line and to operate the two machines in tandem. The Theory Center is the only one of the five national supercomputer centers that has concentrated on parallel computing, that is, learning to divide huge scientific problems into pieces run on different processors to speed their solution.

The IBM 3090, with its six processors, provides a six-way parallel capability, and the addition of a second machine would double the number of parallel processors to 12. Such a system, to be operated by the CNSF, would be capable of a peak speed of about 1.4 "gigaflops," or 1.4 billion floating-point operations per second.

The Theory Center also plans a major effort in advanced computer graphics because the ability to see the results of complex calculations has proven an extremely powerful aid to understanding.

The new proposal includes advanced graphics hardware and software, as well as a joint effort with the Cornell Program of Computer Graphics to develop an unprecedented capability to "steer" calculations

graphically. With this graphics power, a scientist, instead of performing a set of calculations and later building a picture for analysis, could see computer pictures form as calculations are made. He or she could decide in "real time" exactly how a computing process should continue.

An engineer studying how fuel burns inside an engine, for instance, could "experience" his or her calculations via a computer-generated picture of the combustion chamber on the computer screen. The engineer thus could alter the fuel mixtures and combustion temperatures, exploring new phenomena as they appear.

Theory Center researchers also hope to establish a facility for storing gargantuan amounts of data on magnetic and optical computer disks. A major problem in science is coping with vast libraries of information generated by such sources as satellite studies of the earth's surface and atmosphere, seismic studies of the earth's depths and experiments on fundamental atomic particles from high-energy-physics experiments.

Such a facility could store masses of data that are the equivalent of whole libraries, and with advanced data-handling techniques make each bit of data quickly available to researchers.

—Dennis Meredith

Notables *continued from page 2*

bachelor's degree in geography from the University of Washington in 1968, a master's degree in resource economics from the University of Rhode Island in 1974 and a Ph.D. in agricultural economics from the University of Wisconsin in 1978.

The Cornell Chapter of Gamma Sigma Delta, the honor society of agriculture, has presented 1988 awards to five Cornell faculty members and two undergraduate students for outstanding professional and academic achievements. Jean R. Robinson, chairman of the Department of Consumer Economics and Housing, and Edgar M. Raffensperger, a professor of entomology, were cited for outstanding teaching careers. William Hansel, the Liberty Hyde Bailey Professor of Physiology and Veterinary Physiology, received the Award of Merit in Research.

Cited for achievements in extension were agronomist Robert F. Lucey, the E.V. Baker Professor of Agriculture; and Jane W. McGonigal, senior extension associate and program specialist in Cooperative Extension.

M.H. Abrams, the Class of 1916 Professor Emeritus of English Literature, has been elected a Corresponding Fellow of the British Academy, a learned society of humanists and social scientists. In addition, he recently received the Distinguished Scholar Award from the Keats-Shelley Society.

Abrams, a member of the Cornell faculty since 1945, is an authority on 18th and 19th century literature, literary criticism and European Romanticism. He is at work on a

new book, "Doing Things with Texts: Essays in Criticism and Theory," scheduled for publication late this year.

Engineering Professor Francis C. Moon will conduct research at the Technical University of Darmstadt in West Germany over the next six months. His research will include using new superconducting materials in magnetically levitated bearings, possibly permitting them to reach speeds of from 300,000 to one million revolutions per minute.

Working under an Alexander von Humboldt Prize funded by the Federal Republic of Germany, he also will lecture at West German universities and pursue his research in chaotic dynamics. Moon, who will be in Europe from August through January, has been a member of the Cornell faculty since 1975 and director of the Sibley School of Mechanical and Aerospace Engineering since July 1987. Professor P.C. Tobias De Boer will serve as acting director of the Sibley School in Moon's absence.

Robert A. Jarrow, the Ronald P. and Susan E. Lynch Professor of Investment Management at the Johnson Graduate School of Management, has been appointed an associate editor of *The Review of Futures Markets*, published by the Chicago Board of Trade. The journal prints academic research papers dealing with futures and options markets, and it circulates to market practitioners and academics. Thomas R. Dyckman, associate dean for academic affairs in the Johnson School, said

Jarrow's appointment reflects his "outstanding research record."

Jarrow's recent research includes bond pricing, term structure of interest rates and mathematical theories for pricing securities in financial markets. He is the author of "Finance Theory" (Prentice-Hall, 1988), a book dealing with selecting and managing investment portfolios.

Cornell University was one of 35 cash winners in the 13th annual Cost Reduction Incentive Awards Program sponsored jointly by the National Association of College and University Business Officers and the United States Steel Foundation. The prizes were awarded July 11 at the NACUBO annual meeting St. Louis.

Cornell received a \$100 prize for installing a heat exchanger at one of its chilled water plants that will produce chilled water with ambient temperatures in the winter at an estimated annual savings of some \$48,000. The device was conceived by W.S. (Lanny) Joyce, a mechanical engineer in the Department of Facilities Engineering.

The university also was awarded an honorable mention for refinements in its cash management processing methods that should result in a cost savings of about \$78,000 a year.

The 35 NACUBO cash awards ranged from \$100 to \$7,500. Cornell has won numerous prizes over the history of the program, including a \$1,000 fifth place award in 1983 for hiring senior citizens on a part-time basis in its student loan collections department for an estimated savings of more than \$92,000 during 1982.

Bonding cap *continued from page 1*

the best in the nation. Research-related rehabilitation work also now will be possible at the Large Animal Facility of the Veterinary College, the Plant Science Building, Barton Laboratory in the New York State Agricultural Extension Station at Geneva and the north wing of Human Ecology's Martha Van Rensselaer Hall.

The Senate vote, at 1:58 a.m. Tuesday, was a long time in coming. The lifting of the bonding cap had been delayed during last year's legislative session and much of this year's as the Legislature and the governor negotiated over the means by which minority- and woman-headed businesses were to be assured a role in state construction projects.

When that issue was settled several weeks ago, the Legislature was able to turn to the actual size of the bonding cap.

The cap is the dollar limit of bonds that can be issued to finance capital projects at the 34 SUNY campuses, including Cornell's four state-supported units.

It was established at \$3 billion in the

mid-1970s, at the time New York State authorities and New York City were experiencing financial difficulties. Even when some of the original bonded debt was retired, the cap remained fixed.

Johnson said there has been "broad bipartisan recognition" in the Legislature of the need to address the critical facilities needs of SUNY's campuses and the four statutory colleges at Cornell.

But with so many major agenda items, it was difficult raising the bonding-cap issue to a high enough priority for action, he added.

Johnson praised Senate Majority Leader Warren Anderson (R-Binghamton) and Sen. James Seward (R-Oneonta), who gave an early-morning "rousing speech" citing the grave consequences for state education if action were further delayed.

In another budget-related development, Cornell's vice president for planning and budgeting, Malden C. Nesheim, has notified the deans of the four state-supported colleges of the budget relief they can expect

from the most recent negotiations to close the state's budget deficit.

In a memo sent last week, Nesheim said that Cornell would regain \$703,100 of the \$1.43 million that had been cut in the last round of state budget reductions. Cornell's four state-supported colleges receive almost half their operating costs from a state subsidy of more than \$102 million, of which the restored amount represents less than 1 percent.

Although Nesheim said the restorations are welcome relief, he expressed continuing concern about the colleges' budget situation.

Significant utility deficits projected for the current year remain unresolved, and the announcement this week that the state expects an additional deficit of \$133 million adds to the uncertainties of state budgeting for 1989-90, he said.

Nesheim cautioned, therefore, that the current relief may be essential just to deal with these uncertainties.

—Sam Segal

Barton Blotter: 11 thefts reported

Computer components valued at \$4,150 were stolen in three separate incidents on campus, according to the morning reports of the Department of Public Safety for July 18 through 31.

A \$2,900 computer and printer were taken from University Hall No. 3, a \$250 external drive was stolen from Upson Hall, and a \$1,000 computer and monitor were reported taken from Myron Taylor Hall.

Eight other thefts reported involved \$931 in cash taken from wallets and rooms on campus, including \$680 taken at Malott Hall from the wallet of a visitor from Finland. Three thefts totaling \$135 were from rooms in University Hall No. 6.

Other thefts included \$300 in acetylene torch equipment stolen from the Schoellkopf Field area and a \$300 camera taken from University Hall No. 3.

Three persons were charged with driving while intoxicated, and two persons were referred to the judicial administrator on charges of forging parking permits.

Biologists perplexed by endangered tortoise's die

Cornell biologists are planning a four-year project to learn why the most endangered reptile in North America — the desert-dwelling Bolson tortoise — cannot be raised in captivity to replenish the species in the wild.

If they can discover what the young Bolson tortoises need to eat in the desert, naturalists have a chance of saving the largest remnant of the giant reptiles that once roamed North America.

"Ironically, we may be killing them with kindness — with over-nutrition," said F. Harvey Pough, the Cornell professor of herpetology who is heading the study of Bolson tortoise diets to begin next summer at the Man and Biosphere Mapimi Reserve in the Mexican state of Durango.

So little is known about the preferred diets of wild tortoises at different stages of development and seasons of the year that scientists cannot be sure what to feed them in nature preserves.

Fewer than 10,000 Bolson tortoises are left in Mexico — the only place in the world they live — and about 3,000 of those are in the Mapimi Reserve. It takes 50 years to replace a reproductive adult.

"During the Miocene Epoch, around 25 million years ago, ancestors of the Bolson tortoise grew shells four feet in length and during historic times, they were still more than 36 inches long. Today they rarely survive to reach half that size," said Pough.

Gopherus flavomarginatus, named for their habit of digging deep burrows in the desert earth, were not even known to science until the 1950s, although they were exploited for food by local populations long before that. The pressures of agriculture are shrinking their natural habitat, their meat is still being eaten, and some are captured illegally as pets despite international bans on sale of the protected species.

"They're known, in ecological terms, as a 'keystone species,'" explained Marion



This endangered Bolson tortoise, about three months old, faces a grim future unless Cornell biologists can solve the riddle of its diet.

Preest, a Cornell graduate student who will spend the next three summers monitoring Bolson tortoise eating habits in the desert. "Their burrows provide homes to a variety of other reptiles, mammals, birds and insects."

At the Mapimi Reserve, scientists from the National Institute of Ecology of Mexico and the Dominguez Hills campus of California State University have been trying to duplicate the tortoises' natural environment

in a captive-rearing project. The goal is to protect the precious reptiles through the egg-hatching stage and early years of life until they can be returned safely to nature.

But nature seems to know something about tortoise nutrition that human foster parents have yet to discover: There have been serious declines in growth and survival rates of the young tortoises produced by the Laboratorio del Desierto at Mapimi. In addition, growth anomalies in shell de-

velopment have been a recurrent problem. "Similar deformities and death of hatchlings have plagued attempts to rear of endangered tortoises, including the Galapagos tortoise, in captivity," noted Pough, a specialist in the physiology of reptiles and amphibians. "Nutritional imbalances are likely cause of deformities and deaths of young tortoises in captivity, but the exact causes of these problems are unknown."

The captive feeding of desert tortoise complicated by the environment to which they have adapted, Pough explained. About three-quarters of the annual rainfall in Mexican desert comes during the summer months, and the region gets less than 10 inches of precipitation a year. The rest of the year, desert plants have low-water and high-salt contents, and tortoises have trouble eliminating salt from their bodies. So they must eat enough water-rich plants during the four-month rainy season to last the next eight months.

"The interplay of food quality and quantity with the supply of water in habitats with wet and dry seasons creates a situation in which too much food may sometimes be as bad as too little food," Preest said. "We want to study food and water intake of Bolson tortoises in the wild, and use this information to devise a feeding and watering system that will ensure normal development and survival of tortoises in captivity, until they can be released into protected preserves."

The study will bring a few Bolson tortoises temporarily to Ithaca. While in the laboratory that simulates, as closely as possible, the conditions of the Mexican desert, the tortoises will be tested for digestive efficiencies, passage rates of food and growth rates of animals on different diets.

The researchers are seeking funding support from foundations and corporations and also are accepting tax-deductible donations.

— Roger Segelke

Job Opportunities continued from page 6

eligible for licensure in NYS. 2 yrs. exp. working w/animals pref. in clinical atmosphere. Apply by 8/12. Min. Biweekly: \$534.30

TECHNICIAN, GR20 (T2808) Clinical Sci.-S
Maintain & supv. vet student Theriogenology Lab. Maintain computerized dairy herd breeding & performance records. Assist in teaching vet students, perform breeding soundness evaluations on large animals. Assist clients while treating infertility cases.

Req.: BS, lab exp. processing biolog. specimens desir. Exp. working w/large animals, specifically stallions & bulls. Apply by 8/12. Min. Biweekly: \$534.30

TECHNICIAN, GR21 (T2806) Diagnostic Lab-S

Perform serological tests, incl. serum neutralization, complement fixation & agar gel immunodiffusion/hemagglutination inhibition. Prep. clinical specimens, perform fluorescent antibody & viral isolation procedures. Prep. media, buffers & other solutions.

Req.: BA, microbio., bio. or equiv. 2 yrs. related work exp. Exp. in tissue culture desir., not req. Apply by 8/12. Min. Biweekly: \$557.70

TECHNICIAN, GR21 (T2815) Food Sci.-S

Org. & perform research in dairy chem., incl. gel electrophoresis, gas chromatography & spectrophotometric assays. Assist in daily lab operation.

Req.: BS/MS, biochem./chem. or equiv. 1-3 yrs. related exp. Exp. in chromatography & gel electrophoresis desir. Apply by 8/5. Min. Biweekly: \$557.70

TECHNICIAN, GR21 (T1409) Vet. Pathology-S

Process incoming electron microscopy samples, incl. semi-thin & thin sectioning of samples; participate in trng. & supv.

Req.: BA, bio. sci. pref. 3-4 yrs. exp. in active electron microscopy lab. Apply ASAP. Min. Biweekly: \$557.70

TECHNICIAN, GR22 (T1401) Vet. Pathology-S

Independently design & assist in purification & characterization of organ-specific, matrix associated tumor cell adhesion molecules, resp. for organ preference of tumor metastasis.

Req.: BS req.; MS pref. 1-3 yrs. exp. in lab: affinity & column chromatography, ELISA, gel electrophoresis, protein purification, Western blotting; bkgrnd. in hybridoma-monoclonal antibody techniques, HPLC chromatography protein iodination & tissue culture desir. Apply ASAP. Min. Biweekly: \$581.09

TECHNICIAN, GR24 (T2814) Agronomy-S

Provide srvc., analytical expertise & leadership in procedures & operation of Nutrient Analysis Lab. Specific foci are continuous improvement in soil, water & plant sample analysis procedures; development of new analytical methods for difficult/unusual sample analysis. Coord. technician workload & schedule. Oversee quality control program. Instruct/train technicians.

Req.: BS, analytical chem. or equiv. MS pref. 2-4 yrs. exp. in soil, water & plant analytical methodologies. Familiar w/computers desir. Strong comm./interper./supv. skills req. Apply by 8/12. Min. Biweekly: \$639.60

Part-Time

PROGRAM COORD. I (PA2606) A&S
Deans' Office; Language House Program-E

Resp. for program development & planning; maintain faculty participation in programs; select students & resident native speakers. Coord. residential aspects of program w/Res. Life Dept. Prep. budget & develop funding strategies. 1/2 time; 10 month position.

Req.: AB. Good admin. & comm. skills nec. Interest in developing effective foreign lang./lecture programs. Fluency in a foreign lang. & familiar w/CU desir. Send letter & resume & 3 letters of recommendation to Cynthia Smithbower by 8/5.

READING LAB MONITOR (PA2703) Learning Skills Center-E

Org. instruction; order & maintain lab materials. Maintain student records, score tests, provide individual assistance to students. Some eve. work. 12:30-4:30; some eves.

Req.: BS in reading or related field. 1-3 yrs. exp. working w/college students in learning ctr. related activities; exp. w/study skills development, learning disabled students. Letter & resume to Cynthia Smithbower by 8/5.

ASST. COORDINATOR (PA2701) Learning Skills Center-E

Teach regular & outreach workshops in study skills, develop materials, consult w/students, maintain student records. Afternoons & some eves.

Req.: BS in reading or related field, MS pref. Exp. working in a College Learning Ctr.; strong comm. skills; exp. w/learning disabled students. Letter & resume to Cynthia Smithbower by 8/5.

SECRETARY, GR19 (C2903) Russian Literature-E

Process grad. & undergrad. field work for dept. Type corresp.; file; phone; p/r & some acctg. M-F; 4 hrs./day.

Req.: AAS or equiv. Min. 2 yrs. off. exp. Exp. org., interper. & comm. skills. Familiar w/Wordperfect. pref. Med. typing. Min. full-time equiv.: \$510.90

ADMIN. AIDE, GR19 (C2916) Human Relations Program-E

Provide admin./clerical support to dir. & program. Coord. volunteer recruitment & special programs; update micro-computer based info. systems; oversee student assts.; type corresp., reports, etc.; handle off. acctg.; research resource material. M-F, 5 hrs./day.

Req.: AAS or equiv. Min. 1 yrs. admin. & sec. exp. pref. Exp. w/Wordperfect & Lotus 123. Good comm. & writing. Able to work w/a wide diversity of people. Some acctg. exp. Med. typing. Min. full-time equiv.: \$510.90

SECRETARY, GR19 (C2910) Western Societies Program-E

Prep. corresp., papers, reports, classwork for 1 professor; maintain files; coord. conferences, seminars, mtgs., travel; publicity for events; WP; special projects. 4 hrs./day; 9 month appt.

Req.: AAS or equiv. Min. 1 yr. CU exp. Able to work w/wide diversity of people. Exp. org., interper., comm. skills. Knowl. of CU forms/

acctg. system helpful. WP (IBM compatibles) skills. Min. full-time equiv.: \$510.90

TECHNICAL SUPPORT PERSON (T2309) Computer Svcs.

Report or handle minor hardware problems, create hard disk back-ups; prep. for & assist instructors w/workshop problems; maintain equip. Mon.-Thurs., 8 a.m.-12 noon. Fri., 9 a.m.-12 noon. Hrs. subject to change.

Req.: H.S. dip. or equiv., AAS in computer sci. pref. Exp. interper. skills & problem solving ability. Familiar w/IBM microcomputers (Personal System IIs), Apple Macintosh, an Apple Talk network & CU mainframe systems. Exp. w/electrohome projector pref. Apply ASAP.

LATE NIGHT COMPUTER OPERATOR (T2915, T2914) Computer Svcs.-E

Resp. for overall operation of public computer facility. Maintain online queueing system for terminal users, monitor peripheral equip. such printers, plotters & networks. T2915, Mon.-Fri.; midnight-4 a.m. T2914; 8 a.m.-noon.

Req.: H.S. dip., AAS pref. Exp. interper. & problem solving skills. Familiar w/IBM micros. (incl. Personal System IIs), Apple Mac PCs., Apple Talk & microcomputer software pkgs. helpful. Apply ASAP. Min. hourly: \$6.00

Temporary

Experienced & skilled individuals specifically interested in temporary work should mail application to 160 Day Hall.

ASST. DRIVE/INSTALLER (T2919) Microcomputers & Office Systems

Pick-up & deliver microcomputers & peripherals, typewriters, leased machines, supplies & other off. equip. from Univ. sites. Set-up, install & test equip. at customer location.

Req.: H.S. dip. AAS in elect. helpful. NYS driver's lic. Exp. w/microcomputer tech. & off. systems products helpful. Familiar w/both hardware & software helpful. Mech. aptitude nec. Lift up to 75 lbs. Apply by 8/12.

TECHNICIAN (T0810) Plant Biology

Prep. & examine histological preparations using cytological procedure esp. immunocytochemistry. Perform assoc. data gathering, photography routine analyses. Use of microscope essential. 2 yr. appt. renewal dependent on funding.

Req.: AAS in bio.; BS pref. Knowl. of plants useful. Previous exp. in microscopy, histology of plant &/or animal tissues, staining procedures incl. histochemistry. Apply ASAP.

OFFICE ASST. (C2918) Microcomputers & Office Svcs.

Greet & assist walk-in customers. Process customer orders & sales transactions. Check figures for accuracy. Assist in mailings, answer phone. Mon.-Fri. 8 a.m.-4:30 p.m.

Req.: H.S. dip. or equiv. Knowl. of microcomputers helpful. Good comm., interper. & org. skills. Work well w/public. Letter & resume to Laurie Worsell.

CLERK (C2906) Lab. of Ornithology

Genl. sales duties at Crow's Nest Bookshop during wknds. & holidays. Open, close, & over-

see register sales, answer phones, feed birds, answer basic bird questions. Occas. Mon. nights (3 hrs.) during seminars, alt. wknds. & holidays. Sat. & Sun. 11:30-5:00 p.m.

Req.: H.S. dip. or equiv. Prev. sales exp. req. Knowl. of birds helpful. Good interper. skills. Letter & resume to Laurie Worsell.

SECRETARY (C2829) Writing Program

Act as recept., answer inquiries, refer people to approp. staff. Type corresp., maintain files & off. supplies. Keep track of calendar, copy, handle mail, process acctg. payable.

Req.: H.S. dip. or equiv. AAS pref.; familiar w/Mac computers req. Min. 1 yr. off. exp. Lt. typing. Good comm. (written/oral) skills. Able to deal well w/variety of people & work in busy environ. F/t temp. from 9/1-9/16; p/t from 9/30-12/9. Call Laurie Worsell at 255-2192.

SECRETARY (C2828) Human Service Studies

Type coursework, corresp. & provide genl. sec. support for routine office functioning. Distribute mail, run campus errands.

Req.: H.S. dip. or equiv. Heavy typing, knowl. of Wordperfect essential. Min. 1 yr. off. exp. req. Temp. p/t, 12 hrs./wk. (Mon., Thurs., Fri.) 9 a.m.-1 p.m. until 2/89. Call Laurie Worsell at 255-2192.

SECRETARY (C2820) Ag. Economics-S

Admin. & sec. support for 2 professors involved in areas of teaching, research & extension. Prep. class materials, schedule rooms, prep. research materials, answer phones, make travel arrangements, perform other WP. Mon.-Fri., 8 a.m.-12 noon.

Req.: H.S. dip. or equiv. AAS pref. Min. 1 yr. off. exp. Exp. w/IBM PC (Word software) pref. Med. typing. Call Laurie Worsell at 255-2192.

DISPATCHER (C2804) M&SO

Serve as primary comm. link between campus community & M&SO for maint. requests. Issue job tickets using mainframe terminal. Dispatch tradespersons & asst. via radio comm. system. Mon.-Fri., 7:30-4.

Req.: H.S. dip. or equiv. Exp. interper. & phone skills. Able to work under pressure, w/attention to detail. Exp. w/computers & radio comm. helpful. Trng. in sales/srvc. pref. Med. typing. Call Laurie Worsell at 255-2192.

OFFICE ASST. (C2611) Human Ecology Admin.-S

Assist w/mailroom resp. Handle incoming & outgoing U.S. & campus mail & pkgs. Operate postage meter, record postage charges by acct. for billing. Issue keys & keep key records; receive & return deposits. Check out college vehicle place maint. calls, assist in unloading trucks & needed. P-t, 6 month appt. Mon.-Thurs. 11:00 am-5 pm. Fri. 11:00 am-4 pm.

Req.: H.S. dip. or equiv. Able to lift 100 lbs. Must have valid driver's lic. Operate fork lift & standard shift van. Min. 1 yr. work exp. Exp. recordkeeping skills & basic math skills req. Able to work well w/hvy. customer volume & frequent interruptions. Send letter & resume to Laurie Worsell.

PAYROLL COORD. (C2310) Administrative Svcs.

Resp. for p/r & personnel functions to Admin. Svcs., Facilities Engr., Grounds & Utilities non-exempt personnel (120+ employees incl.: processing personnel action forms, prep. p/r vouchers, workers compensation & disability forms, calculating sick/vacation balances, maintaining employee files, reconciling p/r & job cost labor hrs. F/t, 6 months. Letter & resume to Laurie Worsell.

CHIMES ASST. (C1604) Campus Affairs-E

Asst. w/corresp. & other contacts w/donor visitors, alumni & others. Participate in org. & continued maint. of chimes office. files related to ongoing projects. Search out info. related to new supplies, etc. Provide staff asst. Asst. w/mtg. arrangements & maintain comm. Casual position, approx. 15 hrs./wk. for 1 yr. Letter & resume to Laurie Worsell.

Academic

ASSOC./FULL PROFESSOR (A2901) NYS

SILR Personnel & Human Resource Studies. Contact Professor George Milkovich, NYS SILR, Cornell University, Ithaca, NY 14851-0952.

Keep in touch!

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