Newsletter for the Employees of the Ames Laboratory • Volume 1 Number 5 • May 1990

AMES LAB INSIDER

VEISHEA! - See Page 4.

Scalable Computing Facility Of Future Is Here

The Scalable Computing Facility (SCF), offering futuristic computer applications by using thousands of processors simultaneously, was started at the Center for Physical and Computational Mathematics and Ames Laboratory in April 1990.

"In the next five to ten years, computing with many processors will increasingly gain importance. The Ames Laboratory, DOE, ISU and IPRT are working in close coordination to make this project a success. We are on the leading edge of developments in this field. Our goal is to help ISU emerge as a national leader in this area; setting up of the facility is a step in this direction," Jim Corones, Ames Laboratory deputy director says.

"The basic idea is to make a parallel computing facility available to scientists, faculty and students at the Ames Laboratory, IPRT, ISU and DOE. The key to this cooperation is good communication between individuals in these organizations.

"Right now we have one machine with 2,000 processors in the SCF and plan to upgrade it by adding 6,000 more processors. We have the bids and are about to make a decision on buying a second machine. By the time the project is completed, we hope to have three to four machines representing various approaches to massively parallel computing."

SCF is highly cost effective and much faster than the present systems. Highly parallel computers are the fastest machines. The cost of computing per unit is less on highly parallel machines than on traditional systems.

Although they are faster and less expensive, highly parallel computers typically are somewhat difficult to use. They are not a kind of magic box that you can just log into. It takes considerable effort to get the best out the system.

Asked about the kind of applications which could be run at the SCF, Corones says that it will be useful in almost all kinds of computing that currently runs on traditional supercomputers. The facility will be particularly useful for

Seated at the parallel computer is John Gustafson. Standing: Aaron Davenport and Barbara Helland

Ron Winther, associate computer scientist, is demonstrating parallel computing to a tour group of eighth graders from Gilbert Community School.

global climatic models, and in diverse research areas like chemical engineering and solid state physics.

"The facility encourages interdisciplinary research in massively parallel computation in applied mathematics, science and engineering and computer science. Right now we have ten people from Ames Laboratory and the broader ISU community involved in SCF. It is a university-wide facility. We would like more people to participate in it. The facility is on the national DOE network so that off-site users can have access," Corones says.

"People are our key resource, and we have one of the best authorities in the country, John Gustafson, as the technical expert. Aaron Davenport, assistant director of IPRT and Barb Helland, assistant program director for Applied Mathematical Sciences, are among the other key persons involved in bringing the project up."

Corones, who is also director of the Center for Physical and Computational Mathematics, is the administrative head of the facility. The SCF, developed by the Center, is jointly funded by ISU, IPRT and the DOE, through the Ames Laboratory. ❑

Avinash Pancholi

Professional Secretaries International Seminar

Eighteen Ames Laboratory support staff attended the annual Professional Secretaries International (PSI) seminar on April 25, 1990, at the Scheman Building. Ames Lab received honorable mention for having the largest number in attendance from one unit.

"I appreciate the chance to participate in the conference", says Donna Millang. "The seminar gave the attendees a good opportunity for professional networking." ❑

PSI seminar attendees are front row, seated: Diane Drake, Connie Dowling, Shirley Standley, Susan Ridnour, Kristine Voga; Back row, standing: Christena Krause, Nancy Hamilton, Judy Grass, Shirley Bowman, Barbara Thompson, Ellen Price, Janet Read, Donna Millang, Lesley Hawkins, Betty Beymer, and Brenda Smith. Not pictured: Marilyn Forsling and Janet Rueth.

VEISHEA 1990!

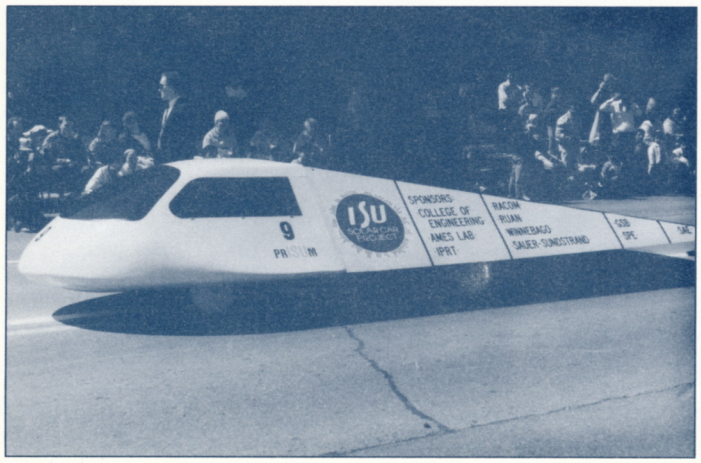
Veishea provides an excellent opportunity for Ames Laboratory to demonstrate science to visitors, perspective students and employees.

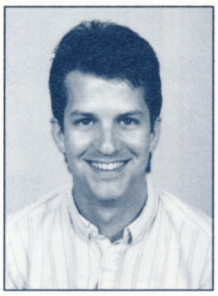
Special thanks go to Stephan Weeks for setting up this year's laser display modules; Scott Thornton and Tom Jones for the computer-animated program; Mike Marti for the graphics and setup; Saren Johnston for recruiting volunteers to staff the exhibit; and Bill Pfeffer for training volunteers.

The following people donated their time and efforts toward the success of the display: Warren Ahrens, James Anderegg, Jennings Capellen, Bob Dawson, Mark Godar, Ted Heise, Tom Lee, Dale Link, Brian Merkle, Gene Pedersen, Darwin Popenoe, Dennis Sailsbury, John Taylor, Frank Tourtellott, Mel Tschetter, Gary Walter, Xiaobing Xi, and Yuan Xu.

"Ames Laboratory's education mission has been supported and strengthened by the volunteer efforts of our dedicated staff. I certainly appreciate their contributions above and beyond their normal responsibilities," stated Tom Barton, director. ❑

Here are photos of some of us who attended the Veishea Parade and display.





Scott Thornton, graphic designer in our Graphic Communication Services department, recently won two design Awards of Excellence in the Art Director's Association of Iowa's annual design competition. The show presents and promotes excellence in design.

Notice to users of HP Laserjet printers: If your printer is under warranty or HP maintenance contract and you use refilled toner cartridges, test the printer with a new HP toner cartridge before calling for warranty or maintenance contract service. If a Laserjet failure is attributable to the use of a refilled cartridge, Hewlett-Packard cannot repair the printer free of charge.

Congratulatons to the High-T_c Update on it's third anniversary, and to editors Ellen Feinberg and John Clem. High-T_c is a superconductivity information exchange newsletter published twice-monthly as hard copy and as electronic mail. Subscribers have grown from 100 in 1987 to 2400 in 1990.

NEW ADDRESSES:

Fossil Energy and ISMMRRI have moved to Metals Development.

Richard Markuszewski, Director, 111 MD
William Buttermore, Assistant, Director, 110 MD
Debra Covey, Program Assistant, 270 MD
Diane Love, Secretary, 111 MD
Tonia McCarley, Research Helper, 111 MD

AMES LAB T-SHIRTS: Anyone interested in purchasing an Ames Lab T-shirt, sweatshirt or cap, please pick up an order form from Cheryl Jacobson, Office of Information, 201 Spedding. Deadline for ordering is Friday, July 6.

For your information: The cover of the Ames Lab phone book shows an abstract photo of a hand holding fiber optic threads, expressing both high technology and communication. The star is a reflection of the end of a fiber optic strand. The cover was designed by Rob Wiltgen, a student intern in the graphics department.

COMPUTER SECURITY

Last month we discussed the various threats to personal computers. One threat is a virus. A virus may be activated by a time bomb. You may have become infected with the virus long before you know it. A time bomb may activate the nth time you run the infected program, as viruses typically must be imbedded in executable code in order to spread. Other time bombs activate on a certain date such as April 1st or Friday the 13th. The infamous Israeli virus was designed to activate on the 40th anniversary of Israel independence.

Another type of threat is the trap door. A trap door is a hidden mechanism that permits system protection mechanisms, such as passwords, to be circumvented. It is activated in some innocent-appearing manner (e.g., special "random" key sequence at a keyboard). Software developers often introduce trap doors into their code to enable them to re-enter the system to perform certain functions.

Trap doors are generally removed before the software is distributed to the public. There is great potential for damage when trap doors are not removed and someone with malicious intent discovers them and uses them to gain entry into the system.

Another threat is the trojan horse. It may be in the form of a useful computer program that contains additional hidden codes that perform harmful functions in addition to it's useful functions. The trojan horse is difficult to detect because the program appears to be operating properly, however, it may be quietly performing any number of harmful actions at the same time.

A threat that affects many users is neglect. Neglect implies not doing something that should be done. As an example, failing to make timely backups of data on both hard and flexible disks is one type of neglect. If a virus infects your machine and destroys data and/or program files that you have accumulated over a period of time, the best way to recover after you have eliminated the virus, is to restore the files that were destroyed. If you failed to make adequate backups, this recovery method is not available.

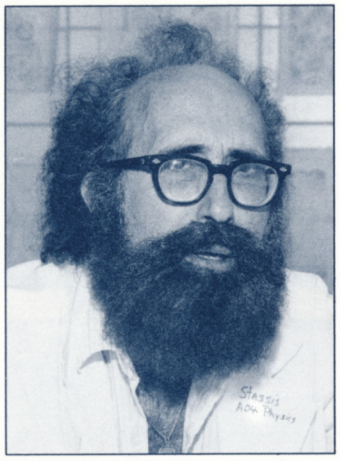
This discussion of threats will continue next month. ❑

Stassis Recognized

Constantine Stassis, senior physicist, Solid State Physics, and professor of physics at Iowa State University, has been recognized as a fellow by the American Physical Society for his contributions to the advancement of physics through independent and original research.

Each year the Society honors a few of its outstanding members by electing them to the status of Fellowship. The citation on Stassis' certificate reads: "For contributions to the understanding of magnetic scattering of neutrons and the growth and studies of metallic single crystals at high temperatures."

The major areas covered by Stassis' research include: study of solids at very high temperatures, magnetic scattering of neutrons and fundamental research in solid state physics. The research done by Stassis during the last four years has applications in high temperature superconductors, a fast developing research area.



Constantine Stassis

The bearded scientist from Greece looks like a philosopher. Stassis has about 100 publications to his credit. He presently has two graduate assistants and throughout his career has guided the research of a dozen students and researchers. ❑

NEW EMPLOYEES

Creg Basgall,
Research Helper
(Karl Gschneidner)

Nevenka Brnicevic,
Visiting Scientist
(Robert McCarley)

Michael Brocka,
Engineering Aide
(Mark Grootveld)

Casey Cummings,
Research Helper
(Martin Edelson)

Karen Gilley,
Secretary II
(Pat Thiel)

Jill Henry,
Typist Clerk
(Gene Pedersen)

Thomas John,
Environmental Systems Mechanic
(Mark Godar)

Jonathan Lang,
Student Associate
(Alan Goldman)

Peter Levenberg,
Research Helper
(Michael Tringides)

Sharon Ringrose,
Student Associate
(Andrew DePristo)

Angie Sellner,
Research Helper
(Bernie Beaudry)

David Seuferer,
Programmer Analyst II
(Frank Carlsen)

Lana Thomas,
Student Associate
(Therese Cotton)

Ross Van Marel,
Painter
(Ralph Appelgate)

Curtis Vogel,
Visiting Scientist
(Jim Corones)

Paul Wheelock,
Research Helper
(Rick Schmidt)

William Wing,
ERD Machinist
(Jerry Hand)

Chenhua You,
Postdoctoral Fellow
(Ed Yeung)

PROMO / *Continued on Page 8* ⇨

Graduate Assistant Among MRS Finalists

Moeljanto W. Leksono, a Ph.D. student in physics and graduate assistant at the Ames Laboratory, was among the 25 finalists selected from all over the world for the Materials Research Society (MRS) Graduate Student Award.

Leksono presented the paper "Patterning of Microwave Plasma Deposited Diamond Films" at the MRS Spring Meeting held at San Francisco in April.

Moeljanto Leksono

Under the guidance of Howard R. Shanks, Microelectronics Research Center director, Leksono has been working on the patterning of diamond thin films. This technique, a highly promising area, may lead to the development of integrated circuit devices that will operate at high temperatures. The joint research effort between the Center and Ames Laboratory has resulted in a breakthrough in the patterning of diamond thin films.

Leksono arrived at ISU in 1987. Having received an M.S. degree from Louisiana State University, Leksono says, "I decided to come to ISU and Ames Laboratory because the facilities here for carrying out research in solid state physics are excellent."

He is a member of the American Physical Society, MRS and Phi Kappa Phi Honor Society.

Hailing from Indonesia, Leksono enjoys working at the Lab and walking with his three-year-old son on the sprawling lawns of the ISU campus. ❑

Service To Humanity Recognized

Vera David, information specialist who retired from the Ames Laboratory in February, 1990, and her husband, Herbert A. David, have been conferred the Human Relations (Individual) Award by ISU in recognition of their service to humanity.

"Individually and together, the Davids have contributed to bettering human relations both on and off campus," the citation says.

Vera David

Vera, who has been active in Amnesty International for many years, has been coordinating letter-writing activities for the release of "prisoners of conscience" imprisoned in Indonesia.

A firm believer in equality, she was also the driving force in organizing and maintaining a group known as "Statistics Women," bringing together female faculty, graduate students and spouses affiliated with the Statistics Department, where her husband is professor and past chair. For many years, she has waged a personal crusade against implicit discrimination against women.

The award was presented to the Davids at a function held at the Knoll on the ISU campus on March 29, 1990. ❑

➪ **PROMO**/*Continued from Page 7*

PROMOTIONS

Chris Fullhart from
Graphic Art Asst. to
Graphic Designer I

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Address correction requested
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