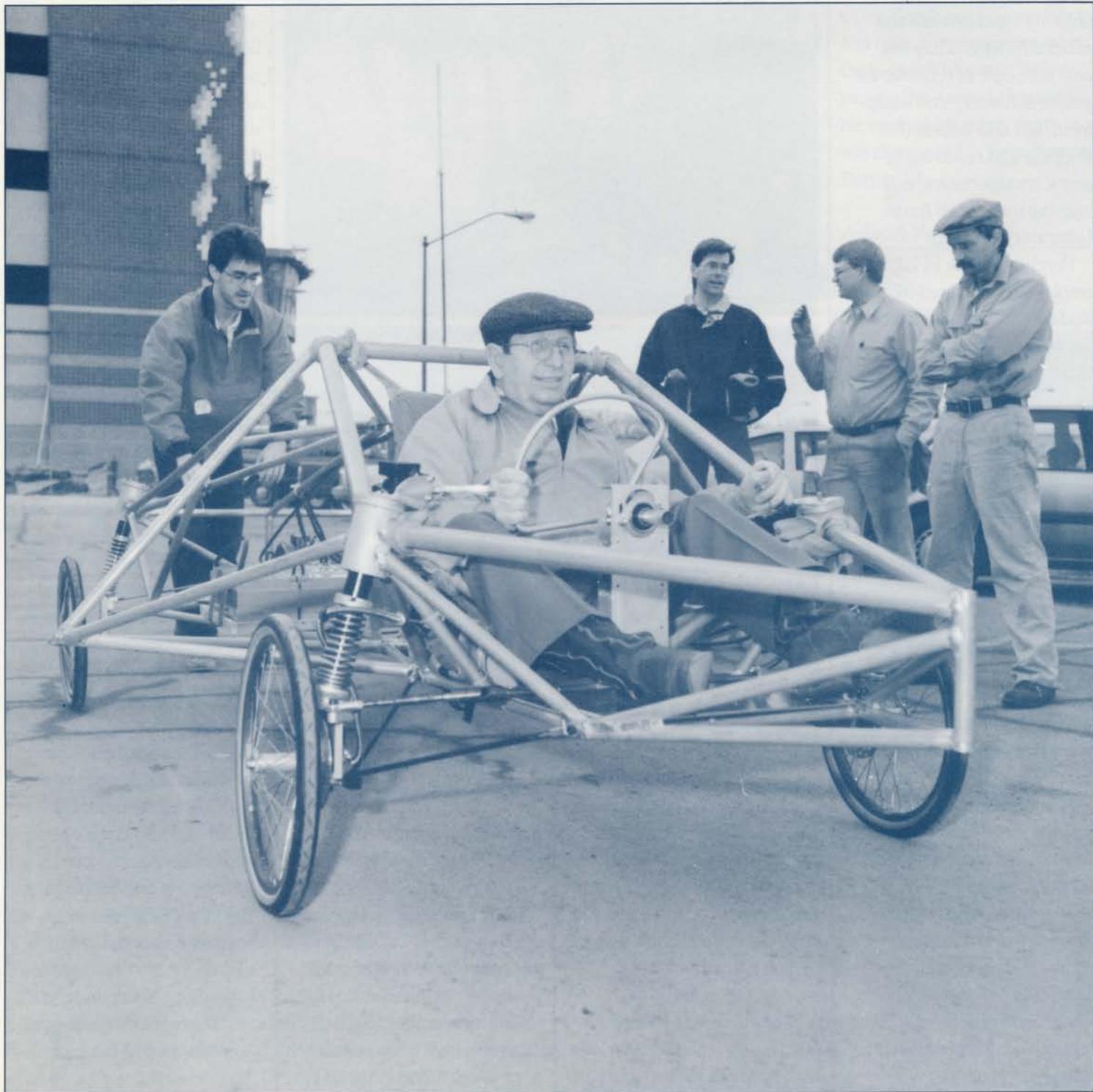


AMES LAB INSIDER



POLLUTION-FREE SOLAR CAR CONSTRUCTED - See Page 4.

They Know Tricks Of Many Trades

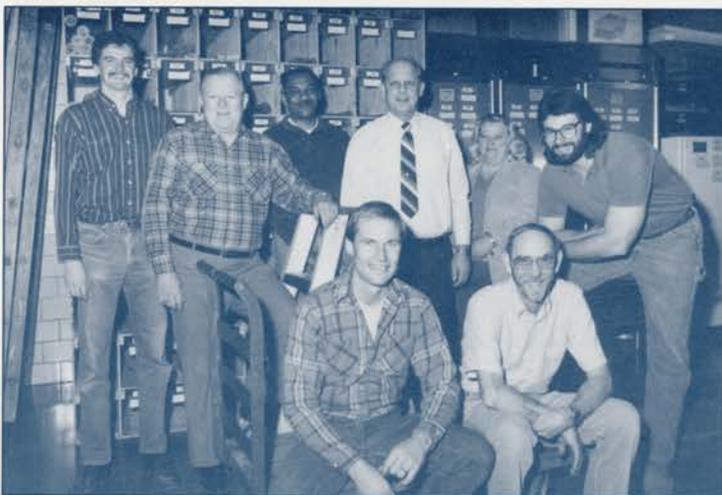
Whatever your role in the Ames Laboratory, you probably have been helped directly or indirectly by the purchasing office. The multifunctional office has three divisions: purchasing, property management and subcontracting. They not only take care of requests for goods, stationery and equipment, but also help in the shipping and receiving of items, transportation, and keeping track of all Ames Laboratory property.

Purchasing has 14 fulltime employees and 3 part-time students. A large portion of the west wing of the first floor of Spedding Hall is occupied by the purchasing office, stores, and property management. They also manage the warehouse situated behind the Metals Development parking lot.

Brimming with a number of new plans, the purchasing staff has many suggestions to save you time, space and Laboratory funds.

"We have been toying with some novel ideas like the use of credit cards for making minor purchases, electronic requisitioning, using FAX for sending small orders to vendors and an all new vendor selection system. Once implemented, such systems could save a lot of time, money and energy, and drastically cut down on paper work," Sylvester Merritt, head of purchasing and property management says.

Purchasing handles 6,000 orders each year for goods and services worth six million dollars. Of this, one million dollars is spent for common



Top Photo - Standing (l to r): Janet Rueth, Tracy Scebold, Sylvester Merritt, Jackie Cummings; Seated: Christena Krause, Connie Dowling, Nancy Hamilton.

Bottom Photo - Standing: Brian Aspengren, Louis Koeneke, Sammy Washington, Jackie Cummings, Judy Grass, Gary Walter; Seated: Frank Tourtellott, Lewis Oswood.

use items like stationery and pens; another one million dollars is spent on ADP (automatic data processing) equipment; and about \$4 million is spent in direct support of R and D.

"The Ames Laboratory purchasing office achieved the highest small business goal of

any organization within USDOE for fiscal year 1989. Since I joined the purchasing office in 1984, we have been winning awards practically every year. We have also received the USDOE award for meeting our small disadvantaged business goals in the past and have been nominated by the Chicago Operations

by the Federal government. By looking at a variety of vendors, you can definitely get products at more reasonable prices.

Jackie Cummings, procurement manager, devotes a majority of his time to subcontracting and property management. He does, however, spend some of his time purchasing high dollar value and complex equipment.

"We are a service organization and our primary concern is to satisfy the customers needs. We do not use vendors who cannot supply quality goods," Cummings says.

"Purchasing always strives to fully support R and D at the Laboratory, but we are required to function within the constraints of DOE regulations. Spending taxpayers money in a fair and competitive environment is also our concern and to achieve this balance we follow federal guidelines and regulations. That is why the higher the dollar value of a purchase, the greater the competition required," he says.

Nancy Hamilton, buyer, enjoys helping requestors purchase equipment and items in a timely manner. "I enjoy interacting with people," she says with a smile. "If you have the required signatures and proper specifications, and some knowledge about the vendor and what you are purchasing, you can get materials costing less than \$1000 the same day you place the order," she explains.

Tracy Scebold joined purchasing as a buyer three years ago. "It generally takes about a week to receive catalogue type items worth less than

Office to receive the award for financial year 1989" he says.

To meet the goals set by USDOE, we strive to buy quality goods at reasonable prices from the kind of business establishments (minority business, small disadvantaged business and labor surplus areas) specified

\$1000," he says. "Items worth over \$1000 can take a minimum of three weeks to get because we require competitive quotes. High dollar value items in excess of \$75,000 and computers valued at \$25,000 or more need additional sanction from the Chicago Operations Office. This could take two additional weeks. For serial number one and model one items, the whole process sometimes could take six months, as these gadgets are usually fabricated according to specifications."

Connie Dowling handles phone calls, correspondence, data entry, and issues numbers for purchase orders. She is the office secretary and receptionist.

Janet Rueth is the veteran of the purchasing staff, having been with the office for ten years. She enters purchasing data into the computer and does the filing.

Christena Krause, who processes the IPRT paperwork, joined the office last October. She enjoys the variety of work. "It is interesting to know the variety of things used by scientists and researchers. I like it," she says.

Louis Koeneker, manager, stores and transportation, has a seven member team to carry out very diverse responsibilities. His multiple duties include shipping and receiving goods within and outside the United States and maintaining the Ames Laboratory cars. The stores and warehouses have some 100,400 items.

Koeneker plans to retire in two years. "My wife and I have decided to go South during the harsh winter

months—January and February—and then return to Iowa to play with our four-year-old granddaughter," he says with a grandfatherly grin.

Judy Grass is the latest addition to the materials handling office and handles data entry and other clerical tasks associated with the storeroom. Joining in December 1989, she is rapidly picking up the basics of property management and shipping.

Lewis (Oz) Oswood, with 30 years of experience in stores, has operated the storeroom in Spedding Hall for four years. "I restock the storeroom shelves, receive materials from the warehouse and issue items to people coming to the window," he says.

"Ames Lab is one of the most interesting places I've worked because of the people. I have contact with people from so many countries, and the rapport I have with them is the best part of my job."

Everyone knows Oz. He is a friendly, helpful person that truly typifies the saying, 'service with a smile!'

Sammy Washington is a lead storekeeper and 'keeper of the keys' of all Ames Laboratory property. He is concerned about unused cylinders occupying space in labs. "We can save a lot of money on demurrage if cylinders are returned to us as soon as the work is over. Also, removal of extra equipment would make your space a lot tidier," he says.

Washington, a veteran with 16 years' experience, keeps track of all the property within the Laboratory. He maintains an inventory of all goods

shipped and received. Asked if he has a 'gold finger,' he laughs and says, "You may say so. I keep a record of all precious metals and rare earths." He enjoys his work and looks upon the Ames Laboratory as one big happy family.

Gary Walter, warehouse storekeeper, echoes Washington's suggestion. He requests all "to come on down and scrap out a lot of stuff you do not need or use." He says the warehouse is a kind of hub of the Lab from where all the goods begin and end. Walter joined the Ames Laboratory five years ago.

Walter has a helpmate in Frank Tourtellott, driver. "He

works very hard. All day long he is busy transporting equipment and goods to the various areas of the Lab," Walter says.

Brian Aspengren, storekeeper, who joined eight months ago, is adapt at many tasks and is considered to be a jack of all trades. "I am called the backup person. I fill in when Gary is not available at the warehouse, run the truck when Frank goes on vacation, and open the storeroom when Oz is gone" he says. Before joining the Ames Laboratory he worked for seven years in a warehouse in his hometown of Boone. □

Avinash Pancholi

Bachman Retires

Robert Bachman, manager, Chemical Analytical Services, retired in February 1990, after serving the Ames Laboratory for 39 years.

"Bachman was very helpful and understanding, and his technical advice was very good," recalls Robert Hofer, chemist who worked with Bachman for 31 years.

"Besides his work, he was interested in me and my family. He was always concerned about other people," Hofer says.

The Chemical Analytical Services laboratory located in Metals Development building serves scientists throughout the Ames Laboratory. □



Robert Bachman

Ames Lab Helps Students Build Solar Car

Several Ames Laboratory employees are donating their time and services to help ISU engineering students build a solar car.

"Ames Laboratory's involvement in the solar car project is strictly voluntary," Roland G. Struss, associate director for operations says. "Machinists in the Laboratory machine shop worked evenings and weekends to fabricate the 35-pound tubular aluminum car frame and will soon build the skeleton frame to support the solar panels. Electronic shop employees have volunteered to give final touches to the solar panel installation and wiring later this month. Actually, the project is primarily the work of ISU students; the involvement of Ames Laboratory is to support them," he clarifies.

ISU was one of 32 universities selected out of 62 entries to enter the competition. An 11-day 1800-mile race called GM Sunrayce USA, sponsored by General Motors and the Chevrolet Motor Division, the US Department of Energy and the Society of Automotive Engineers, will be held in July. The race will begin in Florida and end at General Motors in Michigan. The top three finishers will be sponsored by GM to race in the 1990 World Solar Challenge to be held in Australia in November.

The solar car project began last spring when Paul Basore, an associate engineer in the Microelectronics Center from 1984-1986 and now at Sandia National Laboratory, chal-



Some of the Ames Lab crew that volunteered their time to help engineering students build a solar car are (l to r) Tim Modeland, senior machinist; Jerry Hand, manager machine shop services; Charles Burg, senior research technician; Steven Lee, senior machinist; Roland Struss, associate director for operations; David Swift, engineering student; Terry Herman, engineering student in David Birlingmair's group; and Dennis Olson, engineering student in Delwyn Bluhm's group.

lenged the engineering students at an annual meeting to build the car and enter the race. Accepting his challenge, they are now involved in the massive project involving many people, hours of work and lots of money. (Basore will serve as a battery inspector for GM during the race.)

Struss has been involved with this project from the beginning. "I assisted in the design of the car and built two models in my home workshop. The first model was destroyed in the wind tunnel testing the aerodynamic drag. The second one is more

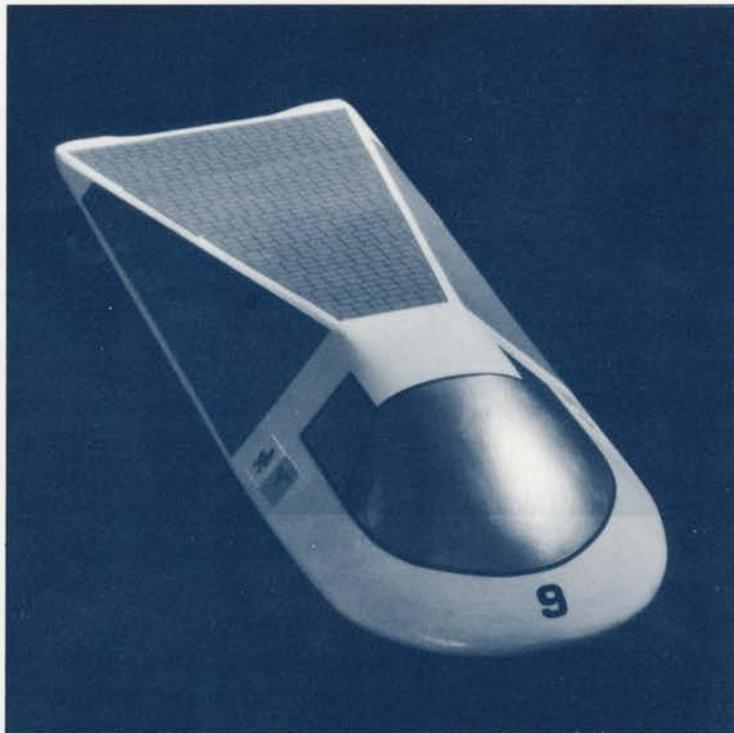
authentic and is being used for fund raising and publicity.

"After the frame was built we put in the test motor and batteries and drove the vehicle for about two and one-half hours. It drove very well. We plan to drive the car about 2000 miles before the race and will continue to improve it. We also plan to drive the car in the Veishea parade."

The solar car, named PrISUM, is teardrop-shaped and very sleek. The car shell was designed after the GM Sunraycer which won the 1987 World Solar Challenge race in Australia. The design is very

aerodynamic and has a very low drag coefficient.

Struss thinks they will do very well with such a design. Light weight and a highly efficient motor with neodymium magnets, originally developed at the Ames Laboratory, will be used. The car will be powered by solar energy converted into electricity by the solar panels on the outside of the car. Silver zinc-oxide batteries will collect excess energy produced by the solar cells for use during peak demand periods. Another plus for ISU's car is the use of a new kind of polyethyl-



Model of solar car built by Roland Struss, associate director for operations. The car is built to 1/8 scale.

ene fabric cloth to build the car shell. Polyethylene is lighter than fiberglass and highly abrasion resistant.

A contest was held to name the car and PrISUM was submitted by a sixth grader from Ballard Elementary School in Huxley. The name was selected by the car team because it highlights ISU.

The car is 6 meters long, 2 meters wide and weighs 550 pounds. The driver must weigh 79 kilograms (174 lbs). If the driver weighs less, they will be ballasted; if they weigh more, the team will suffer from lower efficiency. The average speed will be 40 mph, with a top speed of 65 mph. The driver will sit semi-reclined in a sling-backed seat at the front of the car. The car

must be legal in Iowa and therefore must have two taillights, signals and license plates.

The wheels are wheelchair racing wheels. The brakes are hand-operated and the accelerator foot-operated. Cruise control and turn signals are computer controlled. The car has a micro-processor control system that will be used to telemeter data from the solar car back to the crew in the chase car, monitoring information on power levels of the batteries, how the motor is performing, solar collection, and helping the team plan strategy.

The race will be held on secondary state and county roads in normal traffic. The cars will be started one-at-a-time at 30-second intervals. During the trip through Indiana, the race will make several laps through the

Indianapolis 500 speedway.

Asked if he planned to go along on the race, Struss replied, "I probably will. It will be quite an experience and a chance to meet other school's contestants. National Geographic will be covering it in addition to several news agencies."

The car will cost about \$100,000. Money has been donated from a variety of sources but more is needed. A megatruck, including a driver and fuel, has been donated by Ruan to haul the car to Florida and carry spare parts. Winnebago has donated the use of an RV for a command center vehicle, and many other contributions of materials have been received. A lead car will be supplied by GM at no cost.

"Although we do not know much about the solar cars developed by other universities,

it seems our vehicle stands a good chance. This is the first-ever race and solar car project of its kind in the United States. The race objective, according to GM, is to stimulate interest in technical education and careers among students of all disciplines," he explains.

Discussing the future of such new vehicles, Struss says, "With oil becoming more and more scarce and expensive and the problem of pollution from combustion engines becoming acute, we should see more and more solar and electric vehicles this decade."

The cost of electric and solar vehicles will go down once commercial production starts in the next three to four years. GM, which spent \$3 million on the development of its electric car, hopes to provide such vehicles at a reasonable price, once their mass production starts. Meanwhile, with Ames Laboratory's assistance, Iowa State engineering students are adding their ideas to electric car development. □

Avinash Pancholi/Dianne Borgen

AMES LAB AND THE ENVIRONMENT - EARTH DAY 1990

Ames Laboratory is moving towards greater involvement in environmental restoration and waste management. We are actively involved with DOE in assessing how Ames Lab and ISU can work together to help solve some of these environmental problems.

April 23 - 27 is Secretaries Week. A big THANK YOU to all secretaries and other support staff for your help throughout the year. Your contributions to the Laboratory are valued and your daily assistance and perseverance is appreciated.

Have you noticed anything missing recently? Thirty-five employees are participating in the Slim Down For Summer program sponsored by occupational medicine. To-date the participants have lost a total of 207 pounds. Another 12-week class will begin in the fall. Watch the Bulletin Board for details.

ANNUAL AMES LAB/IPRT GROUP PHOTO

When: Monday, May 14
Where: North steps of Spedding Hall
Time: 1:10 - administration and operations division personnel
 1:20 - science and technology division personnel
Rain date: Tuesday, May 15 - same time and place

All personnel, including associates and students are urged to attend these photo sessions. Copies can be purchased from the Office of Information.

Pesticides will be sprayed in Ames Lab buildings on Friday, May 18 from 5:30 PM - 9:30 PM. Please vacate the premises during this time. Contact your project leader if this interferes with any experiment in progress.

Thank you to 3M's Analytical Services Laboratory in St. Paul, MN for the donation to Pat Thiel's group of ultrahigh vacuum surface analysis equipment for a scanning auger microprobe. The current market value of this used equipment (all in excellent condition) is estimated by 3M at approximately \$40,000; the purchase price of equivalent new equipment is about \$150,000.

The Ames Lab Veishea display will be in the first floor lobby of Spedding Hall on Friday, May 4 from 9 to 5 and on Saturday, May 5, from 8 to 10 and 1 to 3. Laser demonstrations for employees will be held on Thursday, May 3 at 10 and 3. Everyone is welcome to stop by.

COMPUTER SECURITY

A recent survey of all areas of Ames Laboratory showed that we have 236 personal computers in use. These machines are in almost every program area and administrative and operations office.

The personnel who use these machines depend on them to function reliably. However, there are several threats that can make these devices unusable.

A threat is defined as any circumstance or event with the potential to cause harm to the machine or its data. The presence of a threat does not mean that it will necessarily cause actual harm. Threats

exist because of the very existence of the computer and not because of specific weakness. For example, the threat of fire exists at all facilities, regardless of the amount of fire protection available.

The official DOE guideline for risk assessment classifies threats as natural, intentional human, unintentional human and experimental. We will examine some of these threats in detail so that you, as users, will be aware of how to protect your personal computer from harm.

Natural threats come from such things as storms, earthquakes, fire, flood, hurricane, pollution, tornados,

and lightning. It should be obvious to the reader how these threats could deny you the use of your personal computer.

Intentional human threats include such things as terrorist incidents, bombings, riot/civil disorder, sabotage, arson, theft, vandalism, unauthorized access, misappropriation, virus, trap door, trojan horse, neglect, and strikes.

What is a virus? It is a program or set of instructions written by malicious programmers intent on destroying information and/or overloading system operations in other computers. A virus can enter a system surreptitiously through telephone

lines, enter by use of exchanged memory disks, or be hidden among legitimate information. In addition, a virus has the ability to replicate itself from one file to another. Some viruses are quite benign, simply displaying some message on the screen to show its presence. Others are quite vicious because they may make your machine run slowly, erase files, alter data, and all manner of undesirable things.

A virus may be activated by a time bomb. That is, you may have become infected with the virus long before you know it. This discussion of threats will continue next month. □

International Physics Workshop At Ames Lab

European high energy physicists met in Ames with their Ames Laboratory colleagues on March 6 - 8 to discuss their search for the smallest level of matter that has ever been observed.

The international workshop focused on the analysis of data collected at the DELPHI detector at the world's largest particle accelerator near Geneva, Switzerland. Ames Laboratory is one of the primary collaborators in the DELPHI project which aims at creating and studying the Z particle. Z is believed to have occurred naturally only in the high-energy cloud that followed the big bang that scientists credit with forming the universe.

The goal of DELPHI is to shed light on the ultimate structure of matter by harvest-



Workshop participants (l to r): Roberto Contri (Genova, Italy), Gianni Valenti (CERN Geneva, Switzerland), W. Thomas Meyer (AL), Tiziano Camporesi (CERN Geneva, Switzerland), H. Bert Crawley (AL), Alexander Firestone (AL), Herbert Burmeister (CERN Geneva, Switzerland), Eli Rosenberg (AL), Clara Matteuzzi (Milano, Italy), Nanni Crosetti (Genova, Italy), Lucia di Ciccio (Roma, Italy). Not pictured: Paolo Privitera (Bologna, Italy).

ing particles created in enormously powerful collisions. The conditions generated in these are believed to

approach temperatures and energies that existed a few seconds after the big bang. This will help us better

understand the theory of the origin of the universe and the nature of elements. □

Team Work To Develop Versatile Polymers

Bhukan Parbhoo of Dow Corning Corporation has spent the past six months working on polymer research with Ames Laboratory director, Tom Barton. "Working at the Laboratory is very exciting. This is an ideal atmosphere for research. The team meets twice a week, sometimes even at night, to review progress and make constructive criticisms. Barton is very busy, but always accessible and this is highly encouraging for the team," Parbhoo smiles.

Versatile polymers with revolutionary properties and a variety of applications are being developed by the team of scientists led by Barton. "We are breaking fresh ground," Parbhoo says. "The polymers we are developing have a unique molecular structure, are stable and can be processed. This makes them very desirable materials for the future."

Related polymers that Barton's team is studying have potential for novel applications in aerospace, automobile and computer areas. The materials could be transformed into ceramic fibers, plastic semiconductors and optical switching devices needed in the computers of the future. There is hope that the fields of computers and communications will undergo a revolutionary change, using polymers or similar new materials. Computers that work on light signals and do away with intricate electrical wiring

should attain the fastest possible speed in computers.

Parbhoo has an expertise in characterization of polymers which helps him deduce their unique structures. "I am satisfied with my stay here but we still have a long way to go. Providing a material in a lab is the first step; the second is to reliably measure the properties and optimize them. The challenge will be to convince industry that the material is reliable, superior in quality,



Bhukan Parbhoo

has new properties, and is cheaper than the material it would replace."

Hailing from India, the polymer expert is also a polyglot. Now a Belgian citizen, born in Zaire, Africa, making his present home in England, Parbhoo speaks half-a-dozen languages from Europe, Africa and India. His work at the Ames Laboratory was sponsored by the USDOE. □

Struss Receives Award

Roland G. Struss, associate director for operations, has been named Eminent Engineer by Tau Beta Pi, a national engineering honor society. Eminent Engineer is awarded to alumni who have proved their excellence and dedication to the engineering field through their professional record and activities. They serve as role models by demonstrating ideals of integrity, breadth of interest and unselfishness.

Struss has been heavily involved in the Iowa State University solar car project. He has donated countless hours, on his own time, assisting the engineering students with the design and construction of the car as well as fund raising to support the



Roland Struss

project. He single-handedly built two models of the car in his home workshop.

The Iowa Alpha Chapter of Tau Beta Pi at Iowa State University was one of 32 selected from 62 competitors given the opportunity to design and build the car and compete in the GM Sunrayce 1990. □

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