

## President gives medal to Dr. Lovelace for STS-1

President Ronald Reagan presented Dr. Alan M. Lovelace, Acting Administrator of the National Aeronautics and Space Administration, the Presidential Citizen's Medal at ceremonies this week at the White House in honor of the successful first flight of the Space Shuttle Columbia.

Dr. Lovelace is the fourth recipient of the Medal, which was established on November 13, 1969.

In presenting the Medal, the President stated: "For more than 25 years in the public service, Alan M. Lovelace has exemplified the highest standards of responsibility in Federal research and development programs in his steadfast leadership and the stability, continuity and direction to the successful first flight of the United States Space Shuttle."

"In presenting Alan M. Lovelace with the Presidential Citizen's Medal we recognize his unswerving integrity, acceptance of responsibility for the extraordinary technical achievement of the Columbia, a proud symbol for America."

Lovelace became Acting Administrator of NASA in January 1981. He was appointed NASA Deputy Administrator in June 1976 by President Ford.



Fortune 500 industry engineers (left) receive welcome to Goddard from Center Director A. Thomas Young (right) as AIAA-sponsored industry-visit to Goddard gets underway May 26.

## Fortune 500 industries visit Goddard seeking new technology

Research and Development engineers from some five dozen Fortune 500 industries toured Goddard May 27 to view technology developed here with commercial importance.

On a tour arranged by the American Institute of Aeronautics and Astronautics (AIAA), the researchers viewed hardware and talked with Goddard experimenters as they sought both new spin-off technologies from space exploration and new sources of technical information pertinent to industry problems.

Goddard Director A. Thomas Young welcomed the group to the Center and provided an overview of Goddard's space mission to set the stage for the group's tour. A full day of visits to Center laboratories, workrooms and facilities followed, coordinated by technology transfer officials Floyd Roberson of NASA Headquarters and Donald Friedman (702) of Goddard.

The industry representatives received briefings on Goddard's Computer Assisted Design and Manufacturing capabilities present and future from Lloyd Purves (Code 753.2) and Tony Walch (751); on laser research from Louis Caudill (723.1);

on semiconductors from Murzban Jhabvala (724.1); and on Landsat from Bill Campbell (902.1) of the Eastern Regional Remote Sensing Applications Center. Additionally, the visitors viewed demonstrations of technology including: collapsible structures, presented by Harry Burdick (716.1); magnetically suspended bearings (Philip Studer, 716.2, and Meredith Wilson, 716.2); optics (Charlie Fleetwood, 717.2, and Rodney Spencer, 717.2); Radio Frequency systems (John Chitwood, 727.2); cryogenics (Dr. Allan Sherman, 713); and heat pipes (Stan Ollendorf, 732.2). The group also visited the spacecraft assembly 'clean room,' where Richard Day (Code 731.3) briefed visitors on the OSS-1 payload for the Space Shuttle and presented test devices and other space shuttle hardware.

The day concluded with a panel session and wrap up on Goddard technology activities presented by Chess Lunney (HQ Space Systems Division); Floyd Roberson; Donald Friedman; Dr. Harry Plotkin (100), assistant to the Goddard Director; and John Lyons (724) of Goddard's instrument electronics branch.

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## Center rewards safety awareness

The second annual Goddard Safety Award Ceremony was held May 5 in the building 3 auditorium. Goddard awards were presented to persons and divisions in five categories: Safety Award of Honor, Safety Award of Merit, Accident Prevention Award, Contractor Safety Award and Contractor Accident Prevention Award.

The highest level of safety recognition, the Safety Award of Honor, was given to Joseph P. Garvey for his contribution to the safety success of the Space Tracking and Data Network (STDN).

Safety Awards of Merit, given to employees for special safety achievement or performance of safety duties in an exceptional manner, were given to Robert E. Ambrose, Richard D. Cory, Albert M. Dunnington, John M. Garrett, Marciano Guarin, John B. Lallande, Jr., James M. Largent, Claybourne S. Magee, James W. Ryland, Richard D. Stewart, James T. Stillwell.

The following division level civil service and contractor organizations received honorary Accident Prevention Awards for achieving perfect accident records during the calendar year: Office of the Comptroller, Personnel Division, Procurement Management Division, Mission Operations Division, Information Processing Division, Laboratory for Astronomy and Solar Physics, Laboratory for Extraterrestrial Physics, Sounding Rocket Division, Network Operations Division, Earth Observation Systems Division, Laboratory for Planetary Atmospheres, Office of the Director, Goddard Institute for Space Studies, Management Operations Directorate, Office of Public Affairs, Health and Safety Engineering Office, Project Support Division, Assurance Management and Test Policy Office, Project Management Directorate, TDRSS Project, ERBE Project, MMS Project, Orbiting Satellites Project/Applications, Landsat-D Project, Space Telescope Project, Dynamics Explorer Project, San Marco Project, Delta Project, TIROS Project, NOSS Project, GOES Project, Mission Operations Computing Division, Mission Support Computing and Analysis Division, Engineering Directorate, Networks Directorate (codes 800 and 801), NASA Communications Division, Applications Directorate, Mis-



sion Utilization Office; Advance Services Corporation (Security Force), Computer Sciences Corporation (STDN Programming Support), Computer Sciences Corporation (Systems Analysis and Programming).

Contractor Safety Awards, presented to personnel for significant contributions among onsite contractor employees, were granted to Thomas R. Amacher of Northrop Services, and John C. Maycock of Sperry Systems Management.

Center Director, A. Thomas Young, who gave the keynote address, noted the progress that has been made in safety on center and commended the award winners. "... there have been no lost workdays in the last two months resulting from accident or injury," Young said. "Reports from the last four months show good progress with improvements in all areas. The number of reported accident cases fell by about 30% from 1980."

Young further committed himself to an increased safety awareness and said he was pleased that more and more employees are taking the initiative to make Goddard a safer place to work.

## President awards service medals to astronauts Young, Crippen

Astronauts John W. Young and U.S. Navy Capt. Robert L. Crippen were presented with medals at ceremonies at the White House this week honoring their successful mission on the first orbital flight of the Space Shuttle Columbia, April 12-14.

Young, a veteran of two Gemini and two Apollo flights, was presented with the Congressional Space Medal of Honor and the Distinguished Service Medal, NASA's highest award. Young was commander of the Columbia flight. Young becomes the seventh astronaut to receive the Congressional Space Medal of Honor, authorized by Congress in 1969 and first presented in 1978. The award is conferred "to any astronaut, who in the performance of his duties has distinguished himself by exceptionally meritorious efforts and contributions to the welfare of the Nation and of mankind."

Both Young and Crippen, who was pilot of the Columbia, making his first flight into space, were presented with

NASA's Distinguished Service Medal by President Ronald Reagan.

The award ceremony at the White House highlighted a two day visit by the astronauts to Washington.

Six astronauts were awarded the Congressional Space Medal of Honor when it was first presented on October 1, 1978 at ceremonies at Kennedy Space Center, Florida. They were:

Neil A. Armstrong, Commander of the first successful lunar landing and the first person on the Moon; Frank Borman, Commander of the first manned spacecraft to leave the gravitational field of Earth; Charles Conrad, Jr., Commander of the second lunar landing and of the first crew to occupy the Skylab space station; John H. Glenn, Jr., the first American to orbit the Earth; Virgil I. Grissom (deceased), the second American in space and a major contributor to the Mercury, Gemini and Apollo programs; and Alan B. Shepard, the first American in space.

# NASA, industry, universities study computers as key to space future

NASA is inviting computer scientists in industry and government to participate with university faculty members and NASA's own researchers in a 10-week workshop called "Computer Science: Key to a Space Program Renaissance."

The industry input will help set the course for future NASA research and development in computer science and also, indirectly, determine the nature of later spinoffs from the agency's work back to industry. The workshop is scheduled to run from June 9 to August 14 at the University of Maryland's Donaldson Brown Center in Port Deposit, Md. It is being directed by NASA's Office of Aeronautics and Space Technology with support from all the agency's offices.

"NASA is particularly interested in obtaining technical and policy advice from Fortune 500 and high technology aerospace companies," says workshop co-director Dr. Paul Schneck at Goddard Space Flight Center, Greenbelt, Md. An interdisciplinary team of 20 university and 10 NASA researchers forms the core of the group for the study. By assisting the team, Schneck said, the industry experts will have the opportunity to contribute to a study of highly complex, innovative systems technology which will influence the evolution of the nation's space program at every level, from office performance to the structure of new satellite missions.

NASA is seeking ways to increase its productivity in both space and on the ground. To do this and so make increasingly sophisticated missions more affordable, the agency is putting emphasis on computer science as the support technology most in need of an extensive research and development commitment.

This summer's workshop, managed by Goddard, will lay the groundwork for such a commitment.

Workshop participants will prepare a technology assessment of computer science for NASA; draw up a model technology program identifying critical agency technology needs; and plan a model development program.

Many of the results of the study, the sponsors predict, can be used by other

high technology government agencies as well.

Participation in the full 10-week program or for selected portions of it is open to a limited number of industry and government representatives.

Specific questions that the workshop will address include:

- How can NASA apply computer technology more effectively in the missions it flies (from design through fabrication and test, and into mission operations);

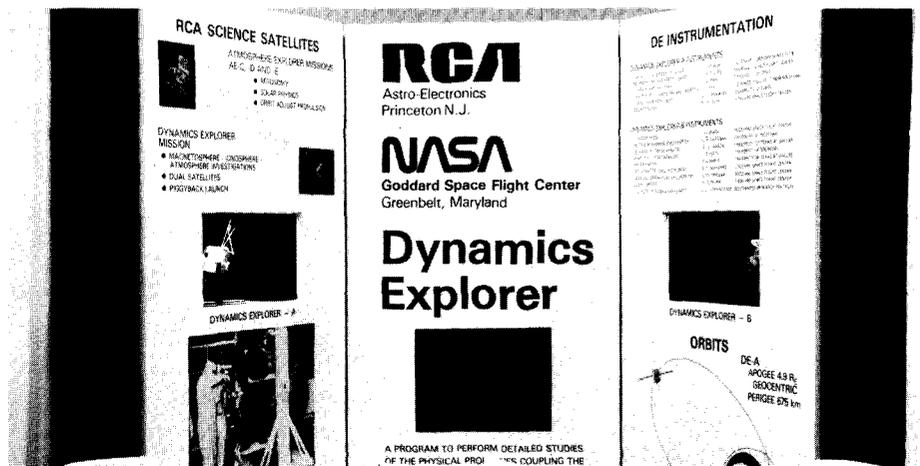
- How can computer science and technology be used to improve the operation of NASA as a government agency;
- How can NASA effectively contribute to progress in computer science and technology;
- What basic/applied computer science research should NASA be conducting;
- How can/must the agency change in order to take full advantage of computer science and technology;
- What initial steps can NASA take;
- How can computer science and technology be used to improve the quality, timeliness, cost, etc., of the agency's products.



## Goddard missions displayed at A.G.U. convention

Displays of two Goddard satellite missions went to the meeting of the American Geophysical Union in Baltimore last month: (above) the Solar Maximum mission, launched February 1980, and (below) the Dynamics Explorer, scheduled for launch July 31. The meeting was attended by some 2,200 scientists and engineers active in studying the Earth and its environment in space.

Both exhibits were designed by Ronald Moltere of Goddard's Presentations Section and built by Plant and Operations Maintenance Division carpenters William Allphin, Alan Wilkerson, John Parker, and Joe Merryman. Electric wires were installed by Richard Karas. The displays were set up in Baltimore by the Goddard Transportation Branch's Arthur Wilcoxen, Grover Hawkins, and Lowell Thomas.



# People

## Computer Club fair

The Goddard Computer Club held its First Annual Computer Fair Thursday evening, May 14th, in the building 8 auditorium from 7:00 to 10:00 pm. There were 14 microcomputers set up and operating with their owners ready, willing, and able to answer questions from the more than 250 computer buffs, and would-be computer buffs, who attended, many with friends, spouses and children.

Programs for financial management, word processing, music, arcade games and much more were demonstrated on the latest, most popular microcomputers including Apple, TRS-80, PET, Atari, Heath, SWTP, Northstar, Sinclair, and two home constructed systems. All of the equipment was owned by Goddard employees or Goddard contractor employees except a Heath H-89 and a TRS-80 Model III which were provided by local stores.

Chuck Mason, the Club President, said that the turnout for this first yearly event surpassed his expectations and was so favorably received that plans have already been discussed for a more comprehensive program next year.

Based on comparisons of different systems at the Fair and recent presentations at the regular club meetings, club members are voting for which computer the club will purchase for member's use. The club now has 85 paid members, and when the new computer is available membership is expected to rise to over 100.

## Engineering Colloquium chairmanship changes

Effective May 4, 1981, Dr. Joseph V. Fedor of the Guidance and Control Branch, Space Technology Division (Code 712, telephone 344-8361), has been appointed Chairman of the Engineering Colloquia Committee beginning with the fall 1981 series.

Dr. Fedor replaces Dr. John J. Degnan who has provided the Center with an exceptional colloquia program during the past 2 years. His dedicated, enthusiastic leadership is appreciated.

## Flight Projects reorganization

Effective May 31, 1981, the Cosmic Background Explorer/Origin of Plasmas in the Earth's Neighborhood (Cobe/OPEN) Project (Code 401) is separated into two projects - Cobe Project (Code 401) and OPEN Project (Code 407). The two projects remain under the overview of Mr. Paul A. Mowatt, Associate Director for New Projects.

Mr. Roger A. Mattson, currently Project Manager for the Cobe/OPEN Project, is appointed Cobe Project Manager (Code 401, 344-7751). Mr. Robert C. Weaver, presently Deputy Project Manager for the Shuttle Payloads Integration and Rocket Experiments (SPIRE) Project, is appointed Deputy Project Manager for Cobe (Code 401, 344-6595). Dr. Stephen J. Paddack, currently Cobe Deputy Project Manager within the Cobe/OPEN Project, is assigned to the New Projects Office (Code 400.1, 344-6612). Mr. Jack W. Peddicord, presently Project Financial Manager for the Cobe/OPEN Project, is appointed Cobe Deputy Project Manager/Resources (Code 401, 344-5916).

Mr. Frank A. Carr, presently on detail to NASA Headquarters on a training assignment, is appointed OPEN Project Manager (Code 407, 344-7751). Mr. Kenneth O. Sizemore, currently OPEN Deputy Project Manager within the Cobe/OPEN Project, is appointed OPEN Deputy Project Manager (Code 407, 344-5108), and in this capacity will lead the OPEN Project in an acting capacity pending Mr. Carr's return to Goddard. Mr. Michael J. Berzonsky, presently Project Financial Manager for the National Oceanic Satellite System (NOSS) Project, is appointed Deputy Project Manager/Resources for the OPEN Project (Code 407, 344-7751).



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**344-5566**

## Awards

### Schmugge: best paper

Dr. Thomas Schmugge (Code 924) has been selected by the Geoscience and Remote Sensing Society Awards Committee to receive the "Best Paper" Award for the best paper published in 1980 in the IEEE Transactions on Geoscience and Remote Sensing. Dr. Schmugge's paper was entitled "Effect of Texture on Microwave Emission from Soils" and appeared in the October 1980 issue. He will receive his award at the 1981 IEEE Geoscience and Remote Sensing Society (IGARSS) banquet to which he and his wife received complementary tickets.

### Markham: best paper

Mr. Brian Markham (Code 923) has been selected to receive the William A. Fisher Award for the best paper presented at the 15th International Symposium on Remote Sensing of the Environment held in May 1981. Mr. Markham's poster paper was entitled "Land Cover Classification Accuracy as a Function of Sensor Spatial Resolution." This award also carries with it a sizable cash stipend.

## Goddard Mourns

### Dr. Hossein Bahiman

Dr. Hossein Bahiman, renowned Goddard expert in Structural Design Analysis and Structural Dynamics Analysis, died June 4 after suffering from a heart attack while jogging near his home. Dr. Bahiman was 59.

Dr. Bahiman, a native of Iran, came to Goddard in 1963 as an Aerospace Technologist. His extensive background in theoretical analysis of materials and structures gave him the unique ability of correlating theory with experimentation with a high degree of accuracy.

He has published several technical papers on mechanical engineering and has at least a half-a-dozen patents. He also received five NASA "Certificates of Recognition" for different inventive contributions and creative developments of technology.

Before joining NASA, Dr. Bahiman was Assistant Professor of Structural Mechanics at Purdue University, Lafayette, Indiana.

## Colloquium for Secretaries holds first program

Goddard's first Secretarial Colloquia was held last month to discuss position classification guidelines under the new Factor Evaluation System (FES) and to answer questions about rules and regulations for clerical workers and secretaries in the federal government.

The new FES is now used government-wide to evaluate the grade level of positions. It has been operating for the past five years and has nine basic factors which it uses as criteria for job evaluation.

According to Susan Johnson from Goddard's personnel office, it was hoped that the colloquia would provide secretaries and clerical workers with a better understanding of the personnel processes and policies that affect their positions.

Speakers discussed how jobs are classified and advertised, and how to better compete for secretarial and clerical positions. Tips were given on how to enhance interviewing techniques along with advice on filling out the SF-171 form according to particular employee aspirations.

During the introductory remarks, Management and Operations Director Benita A. Sidwell said that the colloquia was a much needed vehicle for unifying and informing secretaries. "The turnout attests to the real need for such a forum," Sidwell said. "An office support staff is essential in getting Goddard's mission done, and we are committed to supporting you."



Participants in the first Secretarial Colloquia listen attentively as the speaker explains guidelines under the new FES.

Supervisory Personnel Management Specialist Susan Johnson discusses the guidelines under the new FES and gives some tips in interviewing.



## Fortune 500

Continued from page one

The industry visitors represented:

- AMP Incorporated
- Air Products and Chemicals, Inc.
- Allis Chalmers Corporation
- AT&T Long Lines
- Bendix Corporation
- The Black & Decker Mfg. Company
- Briggs & Stratton Corporation
- Brunswick Corporation
- Cabot Corporation
- Caterpillar Tractor Company
- Celanese Corporation
- Cincinnati Milacron, Inc.
- Combustion Engineering, Inc.
- COMSAT General Corporation
- Control Data Corporation
- Corning Glass Works
- Corroon & Black/Inspace
- Cummins Engine Company
- Dart & Kraft, Inc.
- Deere & Company
- Digital Equipment Corporation
- Dow Chemical Company
- Dow Corning Corporation
- E. I. DuPont deNemours & Co.
- Eaton Corporation
- Exxon
- Foster Wheeler Development Corp.
- Fruehauf Corporation
- Gellman Research Associates
- General Cable Corporation
- General Electric Space Division
- The General Tire & Rubber Company
- Gould, Inc.
- Grumman Aerospace Corporation
- Inco Limited
- Johnson Controls, Inc.
- J. A. Jones Construction Company
- McDonnell Douglas Astronautics Co.
- Merck & Company
- Olin Corporation
- Omni International
- Owens-Corning Fiberglas Technical Center
- Planning Research Corporation
- Republic Steel Corporation
- Rexnord, Incorporated
- Rockwell International
- A. O. Smith Corporation
- A. E. Staley Manufacturing Co.
- Texas Instruments
- Textron, Incorporated
- Satellite Business Systems
- TRW, Incorporated
- Union Carbide Corporation
- Western Electric
- Weyerhaeuser Technology Center



## Keeping Track: Guam

Guam tracking station provided an exciting space angle to the island's Federal Executive Association's annual federal government week May 11 - 15, when agencies hold open house for the public. Above (center) Guam Site Sect'y Celia Quinata poses with George Karras, Site Director, who this year is also vice president of the Federal Executive Association. They are surrounded by very popular displays of NASA's recent successful Voyager and Space Shuttle missions.

# Center Exchange

## *Antarctic meteor: the past in diamonds*

### Johnson Space Center

Dr. Thornton Page, NASA visiting astronomer at Johnson, says Jupiter and Saturn are staging a space spectacular this year. Their orbits are aligned so that they appear to dance around each other. It happens only once every several hundred years. Three times in 1981, the two planets will give the illusion of actually switching places; the event is called a retrograde loop and the next time it will happen will be July 30. Some historians believe that a similar planetary conjunction explains the biblical "Star of Bethlehem."

### Ames Research Center

The world's largest wind tunnel, known as the "40 by 80", located at Ames is being doubled in size and is being converted into two huge tunnels. The addition will be an 80 by 120-foot test section, large enough for planes with 100-foot wingspans — large enough for full-scale tests with engines running of all aircraft below large commercial transport size. The top speed of air flow in the 40 by 80-foot test section will also be increased to 345 mph, an increase of 115 mph.

### Dryden Flight Research Center

Flight testing in the HiMAT program is slated to begin this summer according to Dryden program manager Paul Loschke. During 1981 both HiMAT vehicles are scheduled to be flight tested, each having unique mission requirements. Five flights are planned for each vehicle.

By

Dr. Bevan French  
NASA Planetary Materials Scientist

Tiny crystals of diamond, formed in an ancient cosmic catastrophe, have recently been found in a 10.4-kilogram (23-pound) iron meteorite collected from the antarctic ice cap in 1977. The discovery was reported in the magazine *Nature* by Roy S. Clark, Jr., Daniel E. Appleman and Daphne E. Ross, all of the Smithsonian Institution's National Museum of Natural History.

The antarctic meteorite program is a joint activity of the National Science Foundation, the Smithsonian Institution and NASA. The specimens are preserved, described and distributed by NASA's Planetary Materials Laboratory at Johnson Space Center, Houston.

This is only the second iron-type meteorite discovered to have diamonds within it. The other meteorite, the Canyon Diablo, was much larger on impact.

Diamonds within it are believed to have been produced as a result of the shock pressure of impact when it hit the Earth. The antarctic meteorite is much smaller and would not have produced a sufficient shock when it hit the Earth — the diamonds therefore must have been produced as a result of a collision in space.

The diamonds, a type of crystalline carbon that forms at high pressures, were found as invisible crystals in small carbon-rich fragments found inside the nickel-iron metal that makes up the meteorite. They were discovered when a saw used to slice the meteorite came up against one

of the diamond-bearing inclusions and refused to cut further. X-ray studies then established the presence of diamond, together with two other forms of carbon: a rare mineral called lonsdaleite, chemically identical but a different crystal structure than diamond; and graphite, the familiar form of carbon used in lead pencils.

The tiny amounts of diamond found by Dr. Clarke and his colleagues have no commercial value. The meteorite is probably a fragment of an asteroid, and the diamonds in it bear witness to a great collision that probably took place in the asteroid belt many millions of years ago. Diamonds only form at high pressures, such as those existing deep within the Earth. In a small object like a meteorite, such high pressures can only be supplied by intense shock waves produced as asteroids collide with each other — or with the Earth — at speeds of tens of thousands of miles an hour.

Only one other iron meteorite has been found to contain diamonds. This is the Canyon Diablo meteorite that formed the mile-wide Meteor Crater in Arizona about 50,000 years ago. Diamonds in this meteorite occurred in the same way — as tiny crystals in carbon-rich inclusions in the metal.

"The diamonds in the Canyon Diablo meteorite seem to have formed when it hit the Earth and made Meteor Crater," said Dr. Clark. "The shock waves produced by the impact converted natural carbon (graphite) in the meteorite into diamonds. But the antarctic meteorite is too small to have formed a crater. Being small, it would have been slowed down as it came through the atmosphere, and it would have hit the ice at a low speed. So the diamonds must have formed before then, probably as the result of two asteroids colliding with each other. This meteorite is a piece from the collision."

The diamond-bearing meteorite was collected in 1977 from the Allen Hills region of the antarctic, where more than a thousand new meteorite specimens have been found since 1976. Only nine of these meteorites are of the metallic (iron) type; the remainder are various kinds of stony meteorites.



## GODDARD NEWS

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Editor: Charles Recknagel  
Asst. Editor: David W. Thomas

Editorial Assistant: Pat Ratkewicz  
Pictures: Photographic Section