

## *Goddard Supports Ice Zone Experiment*

Goddard currently is participating in an international Marginal Ice Zone Experiment (MIZEX) in the Greenland Sea.

Scientists from seven nations are using ships, planes, satellites, buoys, drifters, weather observatories, and laboratories to study the sea ice mechanics, the regional oceanography, and response of the sea ice to atmospheric and oceanic forcing.

Scientists from Goddard and Ames Research Center are working as members of the U.S. team, which includes scientists from the Navy, the National Oceanic and Atmospheric Administration, the National Geological Survey, the Cold Regions Research Center, and from various universities, laboratories, and agencies.

The Goddard team, led by Dr. Erik Mollo-Christensen, include Drs. Per Gloerson, Tom Wilheit and Don Cavalieri. The scientists are using a NASA CV-990 airborne laboratory to obtain passive microwave radiometer data from a series of flights over the sea ice cover between Spitsbergen and Greenland.

The aircraft flights are coordinated with the Nimbus-7 satellite in an attempt to improve remote sensing capabilities from space. The aircraft is operating from an airport in northern Norway.

Ames personnel are serving as flight crews, observers, engineers and technicians.

Research ships in the ice and at the ice edge are responsible for placing radar markers on ice floes; positioning buoys and hanging current meters, making meteorological observations, making hydrographic casts; and measuring the properties of the ice and the sizes and motions of ice floes.

Data from NOAA satellites and Nimbus-7 are being used and recorded in stations in Tromso, Norway and Toulouse, France. Nimbus data is being transmitted daily to Tromso from Goddard, giving information on sea ice concentration, wind speed, and sea surface temperatures.

MIZEX's field operations began early this month and will end in late July, when data analysis begins.

Some of the nations involved are the U.S., Norway, France, The Federal Republic of Germany, Denmark, Great Britain, Finland and Canada.

## *Solar Max parts return to Goddard, undergo degradation studies*

Goddard engineers exhibited the returned components from the Solar Maximum Mission satellite May 24, repaired during STS 41-C (April 6-13).

The components included the satellite's Attitude Control System (ACS), the Main Electronics Box (MEB) of the satellite's Coronagraph/Polarimeter instrument, and some thermal blanket material.

Goddard engineers are analyzing the satellite components in the hope of improving future equipment. The ACS's failure stemmed from three undersized fuses used in the system's electronic circuits. The failure of the MEB is attributed to internal degradation of some of the system's microcircuits because of contami-

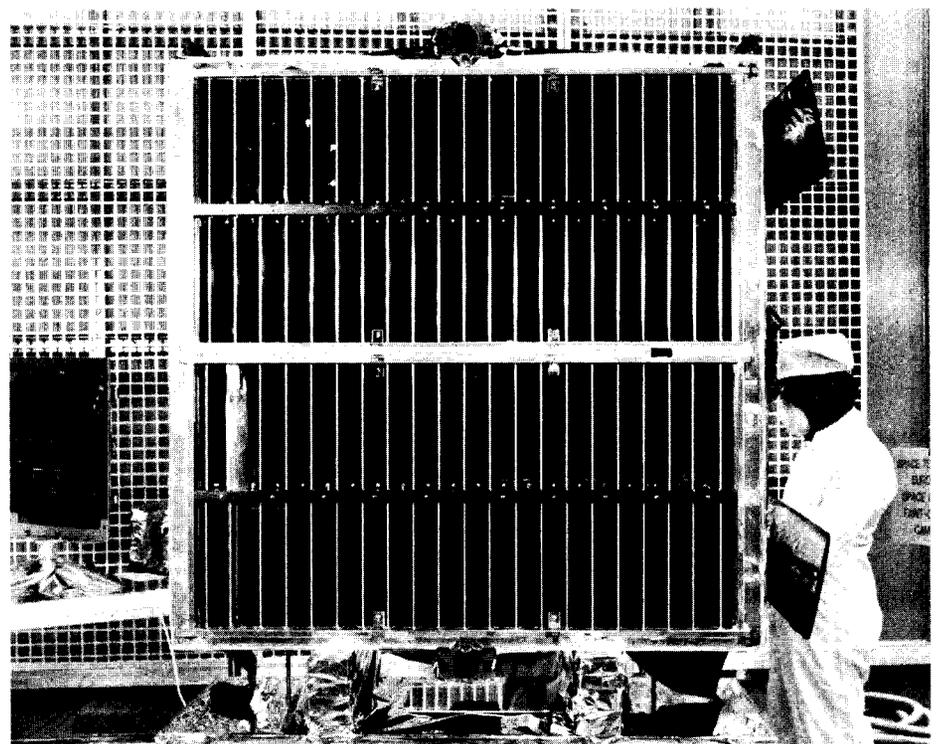
nation. The source of the contamination will be sought during the analysis.

The engineers also are studying degradation of the satellite's thermal blanket material.

The study of the Solar Max components is expected to give engineers a chance to understand the system failures that plagued the satellite more completely. It also is the first look at any hardware exposed to space environment over such a long time. Previously, engineers only have been able to study manned spacecraft returning from relatively short space flights and experiments retrieved from the Moon.

The Solar Max hardware has spent more

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Joe Walters photo

**ATTITUDE CONTROL SYSTEM**—A Goddard technician prepares the ACS for degradation studies in the Center's clean room. In background at left is the Main Electronics Box that was replaced on Solar Max's Coronagraph/Polarimeter.

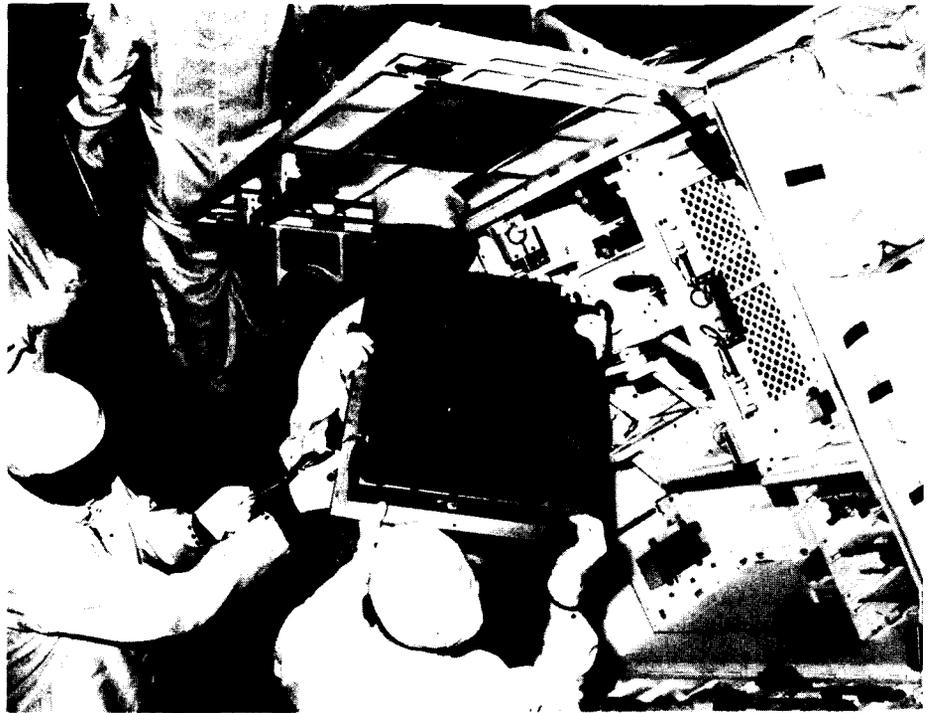
## Solar Max

Continued from page 1

than 4 years in orbit at an altitude of approximately 500 kilometers (310 statute miles).

Goddard is both the development and operations home of the Solar Max satellite, which was launched February 14, 1980 to study solar flares at the peak of the Sun's 11-year cycle of activity. The Center managed the Solar Max's construction and its repair in orbit. The satellite's sole ground control center, which controls satellite operations, is located at Goddard, as is the international team of astronomers making observations with the satellite's instruments.

Replacing Solar Max's failed components required close cooperation between the Shuttle crew and the satellite's ground controllers throughout the mission.



Joe Walters photo

**MEB REMOVED**—Workmen at the Kennedy Space Center in Florida remove the Main Electronics Box (MEB) from the Space Shuttle Challenger following its return to Kennedy after the STS 41-C mission in April. The MEB was repaired by the astronauts during the mission to permit resumption of scientific information collection by the coronagraph/polarimeter instrument on the Solar Max satellite. The MEB arrived at Goddard May 2 for degradation studies.

## Small and Minority Business Conference Held

Goddard hosted its Eleventh Annual Small and Small Disadvantaged Business Conference last month and for the second consecutive year the Directorates provided scientific, technical and administrative personnel to counsel industry representatives. This is a change in the way the conference was conducted previously.

Until last year Goddard allowed 25-30 small businesses to set up displays in one of its auditoriums and invited the local business community to the conference.

"The switch in roles has allowed Goddard to open the conference to any interested small business in the Center's source system," said Franz Hoffmann, head, Industry Assistance and Procurement Analysis Office. "This year over 300 small business representatives attended the conference."

Helen Sullivan, conference coordinator, said the basic objective of this approach was to get as many small and disadvantage businesses communicating directly with appropriate people at Goddard. "This year's representatives were enthusiastic about the

approach and grateful to the Goddard Directorate counselors for their assistance," she said.

In addition to Goddard representatives who provided counseling, the Small Business Administration and local government agencies provided counselors and several of Goddard's prime contractors presented information on their company's subcontracting opportunities.

Community support is evident by the Center's goal accomplishments, according to Sullivan. "In FY '83, we awarded \$96 million to small businesses and \$34 million to minority businesses. We've increased our goals for 1984 to \$104 million for small businesses and \$42 million for minority owned businesses," Sullivan said.

Goddard has earned two Certificates of Appreciation this year from the Federal Executive Board's Minority Business Opportunity Committee for promoting the Minority Business Program.

The first certificate was for expending at least 20 percent of 1983 small business procurement dollars with Minority Business

## Explorer Road to be Widened

Goddard has developed a new plan for widening Explorer Road (formerly road #4) and will start construction this month.

Explorer Road will be widened at its intersection with Delta Road (formerly road #3) to reduce the hazard there caused by four lanes narrowing to two. Most of Explorer Road will be repaired at its current two lane width - new curbs and gutters will be installed, and the storm drainage system will be improved.

The new approach will save nearly \$50 thousand and preserve trees along the north side of Explorer Road.

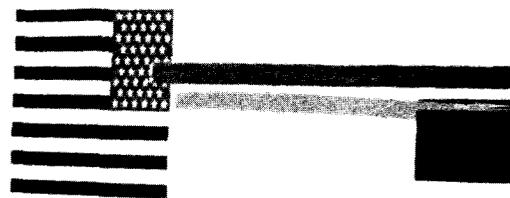
Center Deputy Director John Quann said that proposed new development in the building 7, 10, 15 and 28 area planned for FY '86 and '87 has caused a rethinking of the Center's internal transportation needs, and, as a result, the original plans for improvements became obsolete.

Enterprises. The second was for attaining the largest dollar amount of direct minority business awards in Baltimore, Md., last year.

In addition, the Center's Industry Assistance and Procurement Office received the NASA Group Achievement Award for its small and minority business outreach program.

## STS 41-C crew thanks Goddard for taming Solar Max

# Ur United States



Joe Walters photo

**ASTRONAUTS THANK GODDARD**—Goddard Flight Projects Director William Keathley heralds the Solar Maximum Repair Mission (STS 41-C) as “the total merging of unmanned and manned spaceflight cultures,” as 41-C astronauts listen during a reception for them here last month. The astronauts and their wives from left to right are: Virginia and Bob Crippen, Francis and June Scobee, George and Susan Nelson, Terry and Wendy Hart, and Vallarie and James van Hoften.

Likely, there always will be debate over which is more important: unmanned or manned spaceflight.

But, there was no talk of manned or unmanned priority last month, when STS 41-C astronauts thanked Goddard for taming an errant satellite, and thus contributing significantly to the success of NASA’s first Shuttle-aided, in-orbit satellite repair project - the Solar Max Repair Mission.

“The Solar Max Repair Mission heralds the total merging of unmanned and manned spaceflight cultures,” said William C. Keathley, Goddard Flight Projects Director, at an astronaut reception here last month. “I’m proud to be a part of an agency that collectively can pull something like this off.”

During the 41-C mission, Commander Bob Crippen and Pilot Dick Scobee positioned the Shuttle close to Solar Max in order to retrieve it. The crew’s first few grapple attempts of the spinning spacecraft were futile, causing a worse situation. Goddard flight controllers eventually stabilized Solar Max, enabling mission specialist Terry

Hart to grab the satellite with the Shuttle’s robot arm and pull it into the cargo bay. Once cradled in the cargo bay, mission specialists James Van Hoften and George Nelson repaired it.

Solar Max then underwent an overnight checkout while hoisted above the Shuttle by its robot arm. Once preliminary checkout was complete, Hart then used the robot arm to release the spacecraft. Since being repaired and redeployed, Solar Max has been making scientific observations and operating smoothly.

“The spacecraft has been functioning fine and all objectives have been met,” said Bill Stewart, Solar Max Operations Manager.

The Solar Maximum Observatory satellite was launched in 1980 and, after operating successfully for nine months, developed problems in its attitude control system and its Coronagraph/Polarimeter, one of seven instruments for investigating solar flares.

The repair of Solar Max has enabled solar observations which might not have

been possible otherwise, according to Project Manager Frank Cepollina.

The satellite’s 30-day checkout, which began April 13, was curtailed twice for scientific observations of a highly active region on the Sun. These observations have yielded the largest solar flare recorded since 1978 and largest ever by Solar Max.

Crippen said the crew made a special effort to visit Goddard and thank its people:

“The flight crew often makes several post-flight appearances. Some we enjoy, and some we question. But this one we specifically requested. We wanted to come to Goddard and personally tell you what a fine job you did. The flight crew gets a lot of credit because it’s so visible, but it’s you people that make it happen. It takes a whole team playing together, and it would not have been possible without you.”

Center Director Noel W. Hinners, in his address, said the thanks were mutual: “It’s a great pleasure and an honor to be here today to welcome the crew who did so much for Solar Max,” he said.

## Three Goddard Scientists Chosen for Astro Halley Comet Team



Joe Walters photo

**ASTRO HALLEY TEAM**—Goddard scientists selected as members of the Astro Halley Team discuss the physical properties of Halley's Comet while looking at a photo taken of the comet in 1910.

Nasa has selected three Goddard scientists as part of the U.S. scientific team for observations of Halley's Comet in 1986. Observations will be made using a Shuttle-attached science instrument (Astro) - a Spacelab-type, open pallet instrument assembly consisting of three specifically-designed ultraviolet telescopes and two wide-field cameras (WFC).

Scientists chosen from Goddard for observations of Comet Halley include Dr. John Brandt, chief, Laboratory for Astronomy and Solar Physics (LASP); Dr. Malcolm Neidner, LASP; and Dr. Bertram Donn, Laboratory for Extraterrestrial Physics; other members of the Astro Halley Science Team are Dr. Michael A'Hearn, University of Maryland; Dr. Barry Lutz, Lowell Observatory, Flagstaff; Dr. Chet Opal, University of Texas, Austin; Dr. Robert O'Dell, Rice University; and Dr. Susan Wyckoff, Arizona State University.

These researchers, together with a scientist representing each of the three ultraviolet telescope teams—Dr. Paul Feldman, Johns Hopkins University, Dr. Arthur Code, University of Wisconsin, and Theodore Stecher, Goddard—comprise the full Astro Halley Science Team, which will plan the overall program of observations of Halley's Comet.

Stecher, Neidner, Brandt, and Opal will

work on optical and ultraviolet imaging studies of the comet. Code will study polarization of the cometary gas and dust. Feldman, Donn, Wyckoff, A'Hearn, Opal and Lutz will concentrate on spectroscopic studies of the complex chemistry of the materials in the comet.

The Astro pallet was designed to fly on a series of Shuttle flights to observe stars and galaxies in ultraviolet light. Recognizing the opportunity to study Halley's Comet on the first flight, astronomers added a pair of visible light WFCs to the ultraviolet telescopes on the pallet.

The pallet features three telescopes, co-aligned for simultaneous ultraviolet imaging, spectroscopic and polarization measurements of the comet and other astronomical objects. The instruments are being developed by scientists at the University of Wisconsin, Madison; Johns Hopkins University, Baltimore, Md., and Goddard.

The Goddard Ultraviolet Imaging Telescope (UIT) is designed to provide imaging of very faint objects in the ultraviolet. This instrument will be used to aid in determinations of overall cometary structure and to observe effects near perihelion passage when the Sun's energy boils off significant amounts of material from the comet nucleus.

## Wallops Rocket Launch

NASA successfully launched a two-stage sounding rocket from Goddard's Wallops Flight Facility last month to conduct a wave-plasma experiment in the Earth's upper atmosphere.

The primary objective of the flight was to study wave/plasma interactions in the magnetosphere by stimulating the area with coded VLF radio waves from a transmitter in Annapolis, Md., operated by the Navy. The scientists are attempting to detect electron precipitation induced by these radio waves. The concept is to detect the electron precipitation by remote sensing X-rays produced when the particles collide with the Earth's atmosphere.

A second objective of this continuing program is to conduct studies on middle atmospheric electrodynamics.

This experiment, and similar tests conducted during the past several years, are designed to further our knowledge about the near-Earth environment.

The 227-kilogram (500-pound) payload reached a peak altitude of 89 kilometers (52 statute miles). The Nike-Orion is about 8 meters (30 feet) long and 17 inches in diameter.

Rocker instrumentation included an x-ray detector, a VLF receiver, a Gerdién probe, geiger counter, electric field sensors, and a two axis magnetometer. The payload was programmed to descend on a parachute to increase sampling time on a stable platform in the critical region of interest.

Dr. Richard A. Goldberg of Goddard in Greenbelt, Md., is the project scientist with a team of other scientists that included: Dr. J. R. Bracus, University of Denver; Dr. M. C. Kelley, Cornell University; Dr. L. C. Hale and J. D. Mitchell, Penn State University; Dr. Stephen Curtis, Goddard; and G. Joiner of the Office of Naval Research who was responsible for providing the transmitter support. Dempsey B. Bruton, Jr., is the Wallops project engineer and Charles E. Manion is the Wallops payload manager.

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## Dr. Robert Farquhar Gets Schneebaum Award



Dr. Robert W. Farquhar

Dr. Robert W. Farquhar has received the 1984 Moe I. Schneebaum Memorial Award for his role in proposing, designing and managing the International Sun-Earth Explorer-3 (ISEE-3) mission, now called International Cometary Explorer (ICE).

The ICE mission is using a satellite—which already had completed its designed three-year lifetime of monitoring the Sun in 1982—to study the Earth's geomagnetic tail (completed in December 1983), fly through Comet Giacobini-Zinner in 1985, and study the solar wind's effect on Halley's Comet during late 1985 and early 1986.

In 1981, Dr. Farquhar devised an extended mission concept that allowed ISEE-3 to explore the geomagnetic tail and subsequently place it on an encounter path with Comet Giacobini-Zinner and eventually, further studies concerning Halley's Comet.

Dr. Farquhar has been cited for his "outstanding engineering accomplishment in the creative use of flight mechanics to open new vistas in space."

The award is given in honor of Schneebaum (1920-1973), who joined Goddard in 1958 and was instrumental in the development of cameras for the early meteorological satellites. He played a significant role in developing the Multi-spectral Scanner, Return Beam Vidicon Camera, and Wide Band Video Tape Recorder, which have provided exemplary performances on the Landsat of Earth observation satellites.

## PEOPLE

### Spencer receives John C. Lindsay Award

Nelson Spencer, division chief, Laboratory for Planetary Atmospheres, has received the 1984 John C. Lindsay Memorial Award for his pioneering work in upper atmosphere space research.

He began his research using V-2 rockets and was the Project Scientist for the three OGO satellites, the precursors to the Nimbus weather spacecraft. Spencer also was instrumental in the successful Atmosphere Explorer series, in which he was Project Scientist, which led to the Dynamics Explorer program and similar explorer-type missions for exploring the atmosphere of other planets.

Spencer conducted spectrometer investigations on the explorer-type missions which have provided a basis for starting a project data system, currently being used in planning the Upper Atmosphere Research Satellite



Nelson W. Spencer

and the International Solar and Terrestrial Physics missions.

Dr. John C. Lindsay (1916-1965), the award's namesake, headed Goddard's solar physics program. He pioneered in the exploration of the Sun by both satellite and rocket-borne experiments. Lindsay also conceived and directed the Orbiting Solar Observatory project and was manager of several Explorer and Pioneer missions.

## New Employees

- Milrod, Jeffrey Alan\*, Electronics Engineer (Code 913)  
 Campbell, Cathy A., Clerk-Typist (Code 727)  
 Sims, Regina W., Clerk-Typist (Code 802)  
 Norris, Shantay C., Clerk-Typist (Code 240)  
 Cundiff, Roger Lee\*\*, Student Trainee (Mathematical Science) (Code 023)  
 Szymkowiak, Andrew Edward, Astrophysicist (Code 661)  
 Pogue, William R., III\*, Student Trainee (Aerospace Engineering) (Code 034)  
 Hepner, Donna Lynne, Mathematics Aid (Code 562.2)  
 Plesac, Michael Glen\*, Electronics Engineer (Code 973)  
 Waltner, Kelly Ann, Aerospace Engineering Technician (Code 581)  
 Sullivan, Kevin Joseph, Summer Staff Supervisor (Code 290.1)  
 Fan, Irene, Ai-Lin, Electrical Engineering Technician (Code 311.1)  
 Shannon, David T. Jr.\*\*, Engineering Technician (Code 034.3)  
 Schmidt, Jill Elaine, Electrical Engineering Technician (Code 663)  
 Steefel, Laural Beth, Electronic Engineering Technician (Code 663)  
 Dewey, Thomas Edward, Electrical Engineering Technician (Code 733.1)  
 Cooper, Sharon, Materials Engineering Technician (Code 313.1)  
 Chamberlain, Marcella A.\*\*, Summer Aid (Code 001)  
 Thornes, Terri Sue\*\*, Summer Aid (Code 040)  
 Piazza, Charles R.\*\*, Engineering Aid (Code 971)  
 Serenford, Alexander, Franklin, Aerospace Engineering Technician (Code 716.2)  
 Anthony, Tobin C.\*, Aerospace Engineer (Code 582.2)  
 Fisher, Barbara\*\*, Engineering Technician (Code 040)  
 Eichenmiller, Rodger L.\*\*, Mathematics Technician (Code 971)  
 Rykowski, Lisa Marie\*, Computer Scientist (Code 563.1)  
 Sholly, Gregory Curtis\*, Computer Scientist (Code 271)  
 Bowden, Gina A.\*\*, Summer Aid (Code 252)  
 Ward, Pamela Ann, Student Trainee (Procurement) (Code 226/200.4)  
 Boulware, Dwain A., Student Trainee (Accounting) (Code 226/150)  
 Mautino, Teresa E., Clerk-Typist (Code 151.2)  
 Correll, Thomas E., Student Trainee (Engineering) (Code 745.3)  
 Lee, Janet M., Student Trainee (Mathematical Sciences) (Code 563.3)  
 Carter, David L., Student Trainee (Engineering) (Code 226/913)  
 Rall, Jonathan Andrew Reiley, Student Trainee (Physical Science) (Code 226/313.3)  
 Bailey, Steven A.\*\*, Student Trainee (Mathematical Sciences) (Code 226/971)  
 Phillips, Gregory P., Jr.\*\*, Student Trainee (Engineering Aid) (Code 226)  
 Richardson, Brian W.\*\*, Student Trainee (Engineering Aid) (Code 226)  
 Smith, Herman A.\*\*, Engineering Aid, (Code 971)  
 Fletcher, Adonica\*\*, Summer Aid (Code 1000)  
 Brodsky, Aaron A., Aerospace Engineering Technician, (Code 731.3)  
 Brenneman, Kevin Stuart, Aerospace Engineering Technician, (Code 741.1)  
 Sholly, Gregory C.\*, General Engineer, (Code 271)  
 Thornes, Todd L.\*\*, Engineering Technician (Code 1022.4)  
 Holden, Tameka D.\*\*, Summer Aid (Code 1023)

\* Special rate \*\* Wallops

## New employee begins career building testing systems

Scattered on his desk were parts for breadboarding a data acquisition system - a caseless key board, a dismantled 2k-memory computer, a 16k-memory extender, a tape recorder, soldering equipment, micro chips.

Charles Powers, a new employee in the Materials Testing and Evaluation Section, was building a portable, automated system for collecting data and controlling small experiments. This system is one of many such systems that he may build while at Goddard.

But already he has built a system. Since joining the Center in July, 1983, he has engineered an automated test station for determining lifetimes of encoder lamps used on the GOES series of spacecraft.

"Last January my supervisor left Goddard and I assumed responsibility for the entire Geostationary Operational Environmental Satellites encoder lamp experiment," Powers said. "This included developing a screening method to test the lamps for flight quality, graphing all the data from the lamps, and producing a report on failure mechanisms in the lamps."

Previously, the lamps were tested manually, requiring taxing man-hours. The automated method Powers devised saves money and time, stores more data, and can take data continuously.

"I built the system from the ground up," he said.

Engineers began testing GOES encoder lamps because the lamps were burning out before their designed 2½-year lifetime. Simulated tests showed they operated only 400 days. Powers said the solution would



Joe Walters photo

GOES LAMP EXPERIMENT—Charles Powers, 313.3, adjusts focus of scanning device to begin examination of a Geostationary Environmental Satellite encoder lamp filament.

be to decrease the noise in the encoders so the operating voltage of the lamps could be decreased, or, the lamps could be replaced with light emitting diodes (LED).

He is currently testing LEDs for future use on GOES. "Other projects I'm working on include expanding the GOES encoder lamp experiment to test lamps under AC operation and to test LEDs for use in future GOES satellites," Powers said.

"I'm also working on automating other experiments in this section. Eventually, all

experiments will be automated and become part of the data management network."

Powers joined Goddard two months after graduating from Widener University, Penn. with a B.S. in Electronics Engineering in May, 1983. Currently, he is studying part time at American University towards a M.S. in Physics.

His hobbies include running—he is a member of Goddard's running club; music—he plays percussion instruments; exercising, and hiking.

### NASA awards balloon facility contract to Colorado research company

NASA has awarded the University Corporation for Atmospheric Research, Boulder, Colorado, a \$7,076,741 cost-plus-fixed fee contract for Operation and Maintenance of the National Scientific Balloon Facility (NSBF) Palestine, Texas.

The contract, effective April 1, 1984, is for a basic and two one-year option periods and will be administered by the Goddard/Wallops Flight Facility at Wallops Island, Virginia.

The contractor is providing the personnel, materials, supplies and services to manage, operate, and maintain the NSBF. The contract includes flight program operation, engineering activities and research and development. Sixty to seventy scientific balloon flights are conducted from NSBF annually.

### REMINDER

Reminder: Architects, Engineering Designers, Graphic Designers, Interior Designers, Landscape Architects, Product/Industrial Designers, and Urban Designers and Planners

Announcing - 1984 Government-Wide Presidential Design Awards Program - Call For Entries

To recognize Federal design accomplishments and to honor individuals who have made outstanding contributions to Federal design.

Entry applications and details available, Office of Public Affairs.

Closing date for submissions: July 16, 1984.

Announcement of winners and presentations of awards will be in December, 1984.

## Goddard running club takes first place in Xerox Corporate Marathon Relays

Two relay teams from Goddard's Running and Orienteering Club (GROC) placed first and tenth in the Xerox Corporate Marathon Relays last month in Leesburg, Va.

Following Leesburg, the first place team traveled to Buffalo to compete in the "world championships" May 25, against nine other teams chosen from regional marathons held in major U.S. cities.

Goddard's teams were among 70 ten-member teams from Washington-area corporations that competed in the 26.2-mile race, with each runner covering 2.6 miles. Goddard's first place time was 2:28:33. The Washington Navy Yard placed second at 2:29:33, and the Department of Transportation finished third at 2:34:37.

To qualify, teams had to have two women runners. Barbie Beckford, code 872.2, had the fastest leg for a woman at

16:37. The tenth place team finished at 2:52:08.

Runners on Goddard's first place team were: Tim Minor, Ed Boggess, Dave Hershier, Bill Conroy, Dick Strafella, Tom Nolan, Mike Flynn, Mike Bukowski, Barbie Beckford, and Linda Brennan. Goddard's other team: Richie Weiss, Bob Phillips, Jeff Fossum, Ken Brown, Don Henderson, Gincy Stezar, Claire Parkinson, Joan Unger, Jack Hodge, and Arlene Bigel.

A week before the Xerox marathon, GROC members placed first in all three categories they entered of the Sixth Annual Blake Heart Run for Life. The 10K (6.2 mile) run was held in the hilly Goergetown area of Washington, D.C., and included 60 teams. The three categories were: Open, Female, and Masters.

### The Winning Team



## Astro Team

*Continued from page 4*

The Hopkins Ultraviolet Telescope (HUT) is designed to make brightness observations in the far-ultraviolet of very faint cosmic sources. These measurements will reveal the chemical composition of Halley, including the first attempts to measure helium abundance.

The Wisconsin Ultraviolet Spectropolarimetry Experiment (WUPPE) will make simultaneous observations of the spectrum and polarization of ultraviolet light from the comet. This instrument will also investigate the formation and destruction of dust grains in the comet's tail.

The seven-day Astro mission currently is scheduled to overlap the interval during which several comet probes will intercept Halley. Astro should return outstanding scientific data and photography of Halley's comet. The European Space Agency, Japan

and the Soviet Union have each designed probes which will fly by, the comet in early March 1986. The observations from Astro-1 combined with the comet probe measurements will enable the international research community to obtain measurements of large- and small-scale events occurring in the comet's nucleus, atmosphere, and tail.

The last apparition of Halley was spectacular and widely viewed in 1910 when the comet appeared in the northern hemisphere evening sky. The 1985 - 1986 apparition, however, will not be as spectacular because of unfavorable viewing geometry. Astro photography may be the best way to view Halley.

The least understood of the Solar system family, comets are thought to be primitive collections of ices and dust. An intensive

## Dutchmen Win Basketball Championship

Although they finished third in the regular season, the Dutchmen breezed past the Scorpions 61-49 to win the 1983-84 Goddard Basketball Championship. The Scorpions finished first in regular season.

Enroute to the championship, the Dutchmen beat the Sheiks 43-38 and the Warriors 46-36 in the playoffs. The Sheiks and the Warriors finished second in their divisions during regular season.

Goddard's Basketball League consists of two divisions, A and B, with six teams in each group. The teams play their division rivals three times each during the regular season to total 15 games per team. The two last place A-division teams finished with only 14 games apiece because one of their games was rained out and not rescheduled.

Members of the championship Dutchmen are: Gary Armstrong, Mike Diggs, Sterling Gilmore, Earl Grissom, Paul Harrod, Tom Hughlett, Marvin Jackson, Michael Penn, George Smith, Tyrone Williams, captain-coach Larry Diggs and trainer Kevin Diggs.

Regular season records were: A-Division — Scorpions, 12-3; Warriors, 9-6; Dutchmen, 9-6; Salt and Pepper, 6-9; Ringers, 5-9, and Green Monsters, 3-11.

B-Division — Flyers, 14-1; Sheiks, 10-5; Pizza Shuttle, 10-5; Cake, 5-10; The Geeks, 4-11, and WASC, 2-13.

study of their composition could offer valuable insights into not only the nature of comets themselves but also into the nature of the primordial mixture from which our solar system may have formed some 4.5 billion years ago.

The Astro observatory is managed by the NASA Marshall Space Flight Center. It is scheduled for assembly and integration at the Kennedy Space Center during 1985, and for first flight in early March, 1986. Astro will permit U.S. scientists to obtain ultraviolet observations which are impossible from beneath the Earth's atmosphere.

# Fourteen honorees selected to view Shuttle launch 41-D

"You watch it on TV but you don't get the feeling experienced by being there," said Goddard's Ken Rosette, code 831, "I'm told the whole state of Florida rumbles when a Space Shuttle blasts off."

The whole state of Florida rumbles? A hyperbole if there ever was one.

But Rosette and 13 other Goddard government/contractor employees may agree with that exaggeration June 25, when they attend the 12th Shuttle launch as NASA honorees, as part of the Manned Flight Awareness (MFA) Launch Honoree Program. After hearing the roar of liftoff and thousands of people applauding; after feeling the ground shake; and after seeing the Shuttle rise rapidly atop a gigantic ball of white smoke, they'll know.

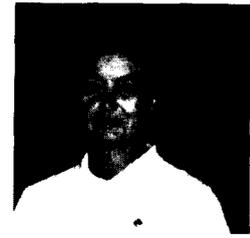
The 14 employees were selected by the Center's MFA Council from more than 50 candidates. In addition to seeing the launch, the honorees will tour the Kennedy

Space Center and attend an astronaut reception before the launch. They will see the launch from a special viewing area.

The honorees are: George Baxter, BFEC; Anthony Comberiate, code 833; Riley Elwood, SPACECOM; John Hudgins, 743; Ernest Keith, Sr., BFEC; Charles Liptak, BFEC; Donald Tinari, 854; Forest Carson, Ford Aerospace; H. Donald Correll, BFEC; Denver Herr, 831; James Johnson, Wallops Flight Facility; Leonard Kozak, Computer Sciences Corporation (CSC); Debbi Ramey, CSC; and Kenneth Rosette, 408.

The launch honoree program began during the Mercury/Apollo era to honor employees who have performed exemplary work related to NASA manned flight programs. It is considered one of NASA's most prestigious awards to government and contractor workers who support the Shuttle program.

## Goddard Mourns



Marilyn J. Flowers

Marilyn J. Flowers, chief nurse at Goddard's Health Unit for the past 18 years, died unexpectedly May 20 at her home in Greenbelt, Maryland. Cause of death was not disclosed. She was 53.

Flowers came to Goddard in 1966 from Glendale Hospital, Glendale, Md. During her employment at Goddard, she was active in Cardiopulmonary Resuscitation classes, the Garden Club, and the Scuba Diving Club. Among her achievements was the Management Operations Directorate Gold Star Award, which she received for her work in the Health Unit and related areas.

Survivors include three children, Carol, Glen, and Patricia, and her mother, Loretta.

Funeral services were at St. Hugh's Catholic Church, Greenbelt, Md., May 25. Those wishing to contribute to a memorial fund in her name can do so at Greenbelt's Fire Department.

## 1984 Launch Activity

### Space Shuttle Launches

Date	Mission	Orbiter	Launch Site*	Mission Remarks
Feb. 3	41-B	Challenger	KSC	Payload: SPAS-01A, Palapa B-2, Westar-VI; successful launch
April 6	41-C	Challenger	KSC	Payload: Solar Max Repair Mission; Long Duration Exposure Facility; successful launch.
June 22	41-D	Discovery	KSC	Payload: Syncom IV-1, Large Format Camera. OAST-1; first flight of Discovery
Aug. 23	41-F	Discovery	KSC	Payload: Telstar 3-C, SBS-D, Syncom IV-2, SPARTAN-1
Sept 15	41-G	Columbia	KSC	Payload: OSTA-3, ERBS, SPARX-1
Sept. 28	41-H	Challenger	KSC	Payload DOD mission or TDRS-B
Oct. 24	51-A	Discovery	KSC	Payload: MLS-1, Telesat-H, GAS Bridge
Nov. 21	51-B	Challenger	KSC	Payload Spacelab 3
Dec. 17	51-C	Discovery	KSC	Payload: TDRS-B or TDRS-C, MSL-2



# Goddard News

Greenbelt, Maryland and Wallops Island, Virginia

The GODDARD NEWS is published monthly by the Office of Public Affairs Code 130, Goddard Space Flight Center, Greenbelt, Md. 20771. Deadline for submitted material is the first of the month. For additional information on articles contained herein, contact the editor on (301) 344-8102.

Editor: David W. Thomas

## In Memoriam

Dr. Alois W. Schardt, a Goddard astrophysicist, died of cancer May 26 at his home in McLean, Va. He was 61.

Dr. Schardt received NASA's Exceptional Scientific Achievement Medal in 1984 and an Exceptional Performance Award in 1981. He came to Goddard from NASA H.Q. in 1976.

While at H.Q., he was instrumental in starting many of the scientific missions, including the High Energy Astronomy Observations. After coming to Goddard, he worked in the laboratory for High Energy Astrophysics, primarily on the analysis and interpretation of cosmic ray data from the magnetospheres of Jupiter and Saturn, obtained with the Pioneer and Voyager spacecraft.

Survivors include his wife, Carla, and five children, Jim, Martha, Bruce, Tom, and Beth.