NASA
National Aeronautics and
Space Administration
Goddard Space Flight Center

Goddard News

Greenbelt, Maryland and Wallops Island, Virginia

Vol. 36 No. 6 June 1990

First Light, Star Bright!

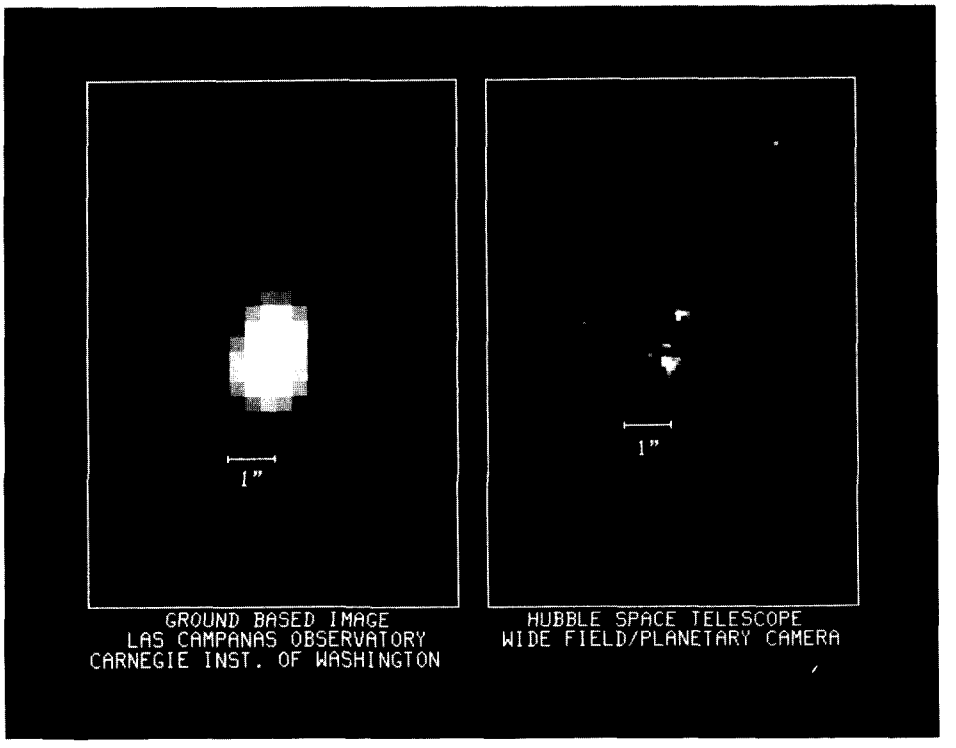
The "first light" engineering test exposure taken by the Hubble Space Telescope (HST)'s Wide Field Planetary Camera (WF/PC) on May 20 was "totally successful," according to David Pine, HST deputy program manager. The telescope achieved a resolution of .7 arc seconds, significantly better than the 1.5 arc second resolution engineers had expected. Operators think that after the initial process to focus the mirrors has been completed, images from the telescope could be seven times more refined, or down to .1 arc second.

The first image, a one-second exposure from the telescope's WF/PC, was taken at 11:12 a.m. EST. It was seen by engineers at Goddard's Space Telescope Operations Control Center (STOCC) for the first time at 1:51 p.m. EDT. A second, 30-second exposure was taken at 11:14 a.m. EDT and viewed at the STOCC around 2:55 p.m. The acquired target, NGC 3532, is an open star cluster in the southern constellation Carina.

The purpose of the demonstration test was to show that the WF/PC can record and transmit images to the ground and to assess the telescope's focusing process. This was not a "focus test." The real process of obtaining the best telescope focus takes several weeks and uses the Optical Control System (OCS) and the Fine Guidance Sensors (FGSs).

Following is a synopsis of how the image was produced:

- The light from the star cluster struck the main 94-inch concave mirror and was reflected to a smaller secondary convex mirror. The secondary mirror reflected the light back down through a hole in the main mirror. The light then was reflected off a small pick-off flat mirror directly into the WF/PC.
- The light came to a final focus on the WF/PC's four charged-coupled device detectors. These detectors converted the photons of light into electrons, which were in the camera's memory as 1's and 0's.
- This digital information was relayed by radio to a computer at Goddard. The computer converted the 1's and 0's back into an image, which was displayed in the STOCC.
- This image was then put into a magnetic tape, which was loaded into a special image processing computer. Once in the computer, Principal Investigator Dr. James Westphal processed the image to obtain the best level of contrast, etc., to optimize its appearance.



***FIRST LIGHT*—Pictured is NGC 3532, an open star cluster in the southern constellation Carina as seen by telescopes on the ground and from space. The left image, taken by a ground based telescope, was obtained by Eric Persson of the Las Companas Observatory, Chile. On the right is the first image returned by the Wide Field Planetary Camera on the Hubble Space Telescope (HST) on May 20. The object shown in these images is a double star: the pair of stars is well separated in the HST image but blurred together in the ground based image. These images are a hint of things to come when further alignment and focusing is expected to produce stellar images smaller than .1 arc seconds.**

More than 65 media representatives witnessed this historic event at Goddard where press briefings carried live on NASA Select closed-circuit television originated.

An excited Dr. James "Jim" Westphal, WF/PC Principal Investigator, California Institute of Technology, reduced the raw unprocessed data and revealed the processed image to his waiting audience.

"...the Hubble Space Telescope is in wondrous, good shape," the excited astronomer exclaimed. His audience agreed. As the black and white images appeared on the television screen the applauding crowd expressed sentiments such as "fantastic" and "gorgeous."

INSIDE

Dr. Jaylee Mead: Pioneer and Explorer

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Talk from the Top

John W. Townsend Jr.

Q: Why must a leave donor be required to donate annual leave when the recipient will be using it as sick leave? I understand that other government agencies allow sick leave to be donated. It also seems if the accepted minimum donated leave increment was lowered to four hours instead of eight, more people would be willing and able to help co-workers in need. Why is this program made so difficult on donors?

A: Public Law 100-566, which established the Leave Transfer Program, allows only annual leave to be transferred to a leave recipient. No Federal Government agency permits the transfer of sick leave. Because of the procedures involved in approving and tracking leave donations, eight hours was established as the minimum donation. This minimum does not appear to be a deterrent to potential donors. The average donation is approximately 20 hours. To date, 689 generous employees have donated almost 14,000 hours to 34 leave recipients. Those interested in the Leave Transfer Program may contact Christina Reed at x63729 in Greenbelt or Ann Derby at x72223 in Wallops.

Editor's Note: This will be the last "Talk From The Top" column due to Dr. Townsend's retirement.

Congratulations ROSAT Team!

Following an unplanned 13-minute hold because of a commercial airplane flying within the vicinity of the Cape Canaveral Air Force Station, FL, the West German Roentgen Satellite (ROSAT) was launched on board a Delta II expendable launch vehicle at approximately 5:48 p.m. on Friday, June 1. ROSAT will examine x-rays emitted by cosmic sources. Goddard is the lead NASA center for this project. Gil Ousley, Code 404, is project manager and Dr. Steve Holt, Code 600, is the U.S. project scientist. Congratulations ROSAT team!

Around-The-World Balloon Flight Planned

by Jim Elliott

NASA and Goddard will participate in an attempt this fall for an around-the-world manned balloon flight.

The flight, to be manned by an American, an Englishman and a Russian, is described as "the last great ballooning challenge left to mankind."

The mission will be launched from Akron, OH, and rise to a cruising altitude of 35,000 to 45,000 feet. After reaching altitude, the expedition plans to follow a course along the 40th parallel, crossing the Atlantic, the United Kingdom, Western Europe, the Soviet Union, Japan and the Pacific Ocean at speeds of 75 to 150 miles an hour. The flight is expected to last between 12 and 21 days. Landing will be "anywhere east of Akron."

Goddard participation includes Charles Vermillion, project manager; Dr. Erik Mollo-Christensen, principal investigator; and Margaret Williams, project coordinator; all of Code 670. Co-investigators are Dr. James Dodge, NASA Headquarters, and Dr. Paul Chan, of Science Systems and Applications, Inc.

The crew is composed of Larry Newman, an accomplished balloonist and a pilot with American West Airlines; Richard Branson, a British entrepreneur and founder of the Virgin and Voyager Groups of companies; and Vladimir Dzanibekov, a cosmonaut and colonel in the Soviet Union's space agency (Glavkosmos).

Newman is the only man alive to have traversed both the Atlantic and Pacific Oceans in a helium balloon. He crossed the Atlantic in Double Eagle II in 1978 and the Pacific, along with three others, in Double Eagle V in 1981. The Pacific flight set the current distance record for a balloon of 5,209 miles.

Branson became the first to cross the Atlantic in a hot air balloon with Per Lindstrand in 1987 in *Virgin Atlantic Flyer*. The balloon was the largest ever flown at 2.3 million cubic feet capacity, and it broke the distance record for a hot air balloon. Branson left school at 16 and made his first million when he was 17.

Dzanibekov has been involved in a number of Soviet space programs, including a nearly six-day flight in 1978 in the Soyuz 27 that linked up with the Salyut 6 space station.

The crew will ride in a 24 by 10 foot pressurized gondola built by Burt Rutan, president of Scaled Composites, Inc., Mojave, CA. The gondola will hang from a million cubic foot helium balloon.

Both NASA and the National Oceanic and Atmospheric Administration (NOAA) will provide satellite communications systems for the flight, which will be covered on television by ESPN.

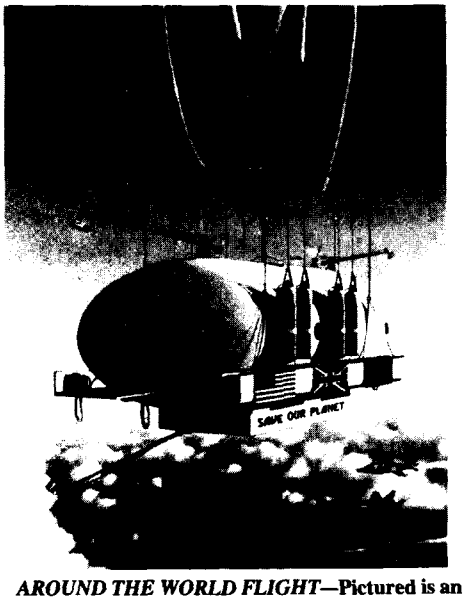
NASA will provide a package of one accelerometer and one magnetometer. The accelerometer will measure changes in the balloon's velocity, and the magnetometer will measure the direction of the acceleration.

NASA also will provide two anemometers suspended below the gondola wind shear.

Attached to the anemometers will be radiosonde packages to measure temperature, pressure and humidity. Also, an ozonesonde radiometer will measure levels of ultraviolet light above the balloon, from which ozone levels can be inferred. Because the bulk of ozone lies above 35,000 feet, the balloon's projected altitude, these measurements will approximate stratospheric ozone levels.

The expedition also will carry an emergency locator transmitter (ELT) for communications, if necessary, with the COSPAS-SARSAT international search and rescue program. The crew also expects to have a constant radio communication link with HAM radio operators.

Entitled "Earthwinds," the expedition is planned for November.



***AROUND THE WORLD FLIGHT*—Pictured is an artist's rendering of the "Earthwinds" gondola for the first non-stop, manned balloon flight around the world. The crew will include Larry Newman (USA), Richard Branson (UK), and Vladimir Dzhanibekov (USSR). Also involved are the ESPN TV Network, NASA, NOAA, Glavkosmos (Soviet Space Agency) and the sponsor of the event, Virgin Atlantic Airways.**

Launch Update: GRO On Schedule

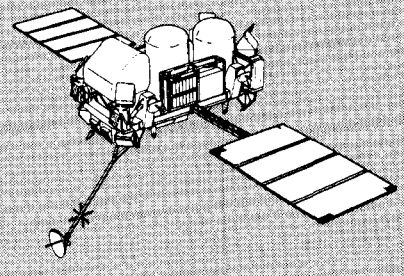
The Gamma Ray Observatory (GRO) is at the Kennedy Space Center, FL, and all is going according to schedule, according to John Hrastar, GRO Project Manager, (Code 403). Hrastar reported, "We are finishing the final hardware work, SPRU [Standard Power Regulating Unit] repairs, battery installation, and partial fuel fills. Everyone is working hard on contingency planning and the final software for the ground systems and instrument data analysis."

Hrastar announced more good news. "It looks like we have an excellent chance of maintaining our November 1 launch date. Atlantis is in good shape. One launch, the SLS [Space Life Sciences Laboratory] has been moved behind GRO, so now there are only three launches in front of us. We have less than five months to complete work on the world's finest flying science machine!"

GSFC will manage the entire GRO project. In addition, GSFC built and will operate one of GRO's science instruments, the Energetic Gamma Ray Experiment Telescope (EGRET), a joint effort by scientists at GSFC, Stanford University, and West Germany, to measure the highest energy gamma rays.

GSFC further supports GRO by providing ground system and various supporting elements and personnel for giving commands, receiving data, tracking the spacecraft, scheduling, and maintaining its health and safety.

GRO will be the largest spacecraft ever deployed from the shuttle. Built by TRW, Redondo Beach, CA., GRO contains four science instruments which will conduct an extensive study of gamma ray sources throughout the universe.



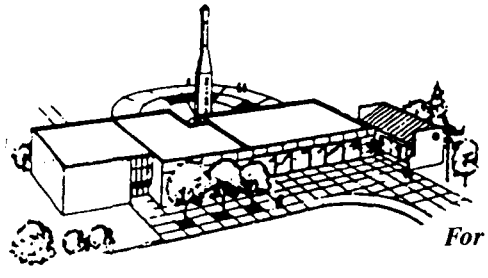
NASA Pipeline

MARSHALL SPACE FLIGHT CENTER, Huntsville, AL—NASA has awarded a contract to the Smithsonian Astrophysics Observatory, Cambridge, MA, to provide a high resolution camera for the space-based Advanced X-Ray Astrophysics Facility (AXAF). This cost-reimbursement-no-fee contract is for $26.7 million. The contract will include development of the high resolution camera, one of four candidate AXAF instruments, through launch and two and one half years of on-orbit operation. Other instruments include a charge-coupled device x-ray camera, which is in final negotiations with Pennsylvania State University, State College, and an x-ray spectrometer, being developed by GSFC. In addition, NASA is continuing definition studies on a Bragg Crystal Spectrometer at Massachusetts Institute of Technology, Cambridge. The AXAF is scheduled for launch in 1997.

NASA HEADQUARTERS, Washington, DC-Sue Mathis Richard has been named deputy associate administrator, for NASA's Office of Public Affairs. Richard works directly with the associate administrator on all matters concerning the news media, public services and television development. Before coming to NASA, she served as vice president of industry communications for the National Cable Television Association, overseeing press, publicity and public relations activities for the cable industry.

DRYDEN FLIGHT RESEARCH FACILITY, Edwards Air Force Base, CA—The X-29 research aircraft is demonstrating in flight much better control and maneuvering qualities at high angles of attack than wind tunnel tests, computational methods and simulations models predicted. The current flights, using the second of two X-29s, are investigating high-angle-of-attack characteristics and military use of the aicraft's unique forward-swept-wing/canard configuration as part of a joint NASA-Air Force program.

July Visitor Center Events



Support Your Visitor Center
All events are free.
For more information, call 286-8981.

Launch Site Goddard—Sunday, July 1, 1:00 p.m. Sunday, July 15, 10:00 a.m. and 3:00 p.m.—Contest commemorating the 21st anniversary of the Apollo moon landing and 15th anniversary of the Apollo Soyuz Test Project.

Saturday Videos—Saturday, July 7, 1:00 p.m.—"The Astro Observatory" is a carefully selected set of telescopes and instruments uniquely designed to address specific questions in ultraviolet and x-ray astronomy. Astro will chronicle the life cycle of stars and will acquaint us with all ages and types of stars: stellar infants that have been born from dusty nebulae, and dying stars that have collapsed to Earth-sized embers.

Know and Tell—Sunday, July 22, 1:00 p.m.—Join Dr. Ted Gull, Associate Chief of Goddard's Laboratory for Astronomy and Solar Physics, who will discuss the instruments on board the Astro mission and how it will see fainter and more energetic objects than any yet studied, and also how the observatory will measure radiation from heavy elements such as iron, oxygen, silicon, and calcium.

Dr. Townsend Bids Farewell For Second Time

NASA Administrator Richard H. Truly announced, recently, the planned retirement of Goddard Director Dr. John W. Townsend, Jr., effective June 30, 1990.

Truly paid tribute to Townsend for his long career in government service. "Jack Townsend exemplifies the best in government servants," said Truly. "He came back to NASA in June of 1987 to help out in the post-Challenger recovery period after a distinguished career in a number of positions at NASA and in other government agencies. As he departs after 33 years of distinguished public service, all of us at NASA wish him the best in his years ahead." Townsend was honored this month with NASA's Distinguished Service Medal, the second time he's received this honor.

Distinguished Career

Townsend started his government career in 1947 at the Naval Research Laboratory, Washington, DC. In the 30 years that followed, he worked at NASA and at the National Oceanic and Atmospheric Administration where he rose to Associate Administrator. While at NASA, Townsend held several positions at Goddard including Assistant Director, Space Science and Satellite Applications; Deputy Center Director; and most recently, Center Director. He was one of three U.S. principals that negotiated the first bilateral space cooperative agreements with the U.S.S.R. in 1962.

Returned to NASA

Townsend left the federal government in 1977 to join private industry where he held a number of senior executive positons at Fairchild Industries before returning to NASA in 1987. Townsend was educated at Williams College, Williamstown, MA.

Dear Friends:

As it will come eventually for each of you, it is time for me to say goodbye to Goddard—in this case for the second time.

My farewell message is simple. I wish to thank all of you for the privilege of working with the finest people in the world involved in the use and exploration of space for science and technology. Goddard continues to grow both in capability and in competence. I wish you well in the future and leave with the hope that you will continue the high standards that we have established, not only of performance, but also of ethics and integrity.

Keep Goddard in front!

John W. Townsend Jr.

Goddard Wins 1989 Equal Opportunity Trophy

NASA's Equal Opportunity Trophy, which has spent more time at Goddard than at any other NASA center, won't have to leave the Building 8 lobby any time soon because for the second year in a row Goddard is NASA's Equal Opportunity Trophy Winner!

NASA Administrator Richard H. Truly named Goddard Space Flight center as the 1989 recipient of this honor, recently. Goddard has won this award a total of four times—1980, 1986, 1988 and 1989—more times than any other NASA center. This is also the first time any NASA center has been independently honored two years in a row.

"In the last four years since Dr. Townsend became Center Director, we've won this award three times," said Dillard Menchan, Chief, Equal Opportunity Office. "His leadership certainly has played a role in our success," he added.

Administrator Truly awarded Goddard this honor "in recognition of innovative and effective management strategies which have significantly contributed to the development of a representative pool of scientists and engineers; the employment, development, and utilization of highly talented minorities, women and individuals with disabilities at NASA; and the distribution of the Agency's resources with a broader array of American citizenry."

Goddard's Power Ratchet Tool: The Bittersweet Drama of an Almost-EVA Mission

"Expect the unexpected" should be the motto of Goddard's Satellite Servicing Project, Code 408. A never-used tool, the Goddard Space Flight Center Power Ratchet Tool (PRT), developed by this project, was carried into space by the orbiter Discovery, during STS-31, just in case the crew had to manually assist in Hubble Space Telescope (HST) deployment operations from outside the spacecraft. When one of HST's solar arrays jammed, it looked like the PRT would get its day in space.

"Surgery Kits"

In preparation for a possible Extravehicular Activity (EVA), Astronauts Kathy Sullivan and Bruce McCandless unstowed HST "surgery kits" from the middeck lockers—one "surgical instrument" floating securely in a bag was the PRT. The astronaut team worked through the preparations for an extravehicular activity and waited for what might happen. After several attempts, the starboard side solar array was deployed negating the need for extravehicular activity by astronauts Sullivan and McCandless.

The PRT was the birthright of HST Mission Specialist McCandless, who envisioned a power tool that would assist the astronaut in completing strenuous repetitive activities. If the solar arrays did not deploy, the extravehicular activity crew members would have had to manually deploy them by steadily cranking on a ratchet wrench until 120 rotations of a bolt (one bolt per solar array) was completed.

"If you have ever tried moving in a suit before, you would understand the effort it takes to manipulate just the gloves!" explained Dr. Ruthan Lewis, Code 408.

"The crew could have done it manually if they had to, but why introduce undue fatigue? Why not preserve that effort to successfully complete other tasks?" she added.

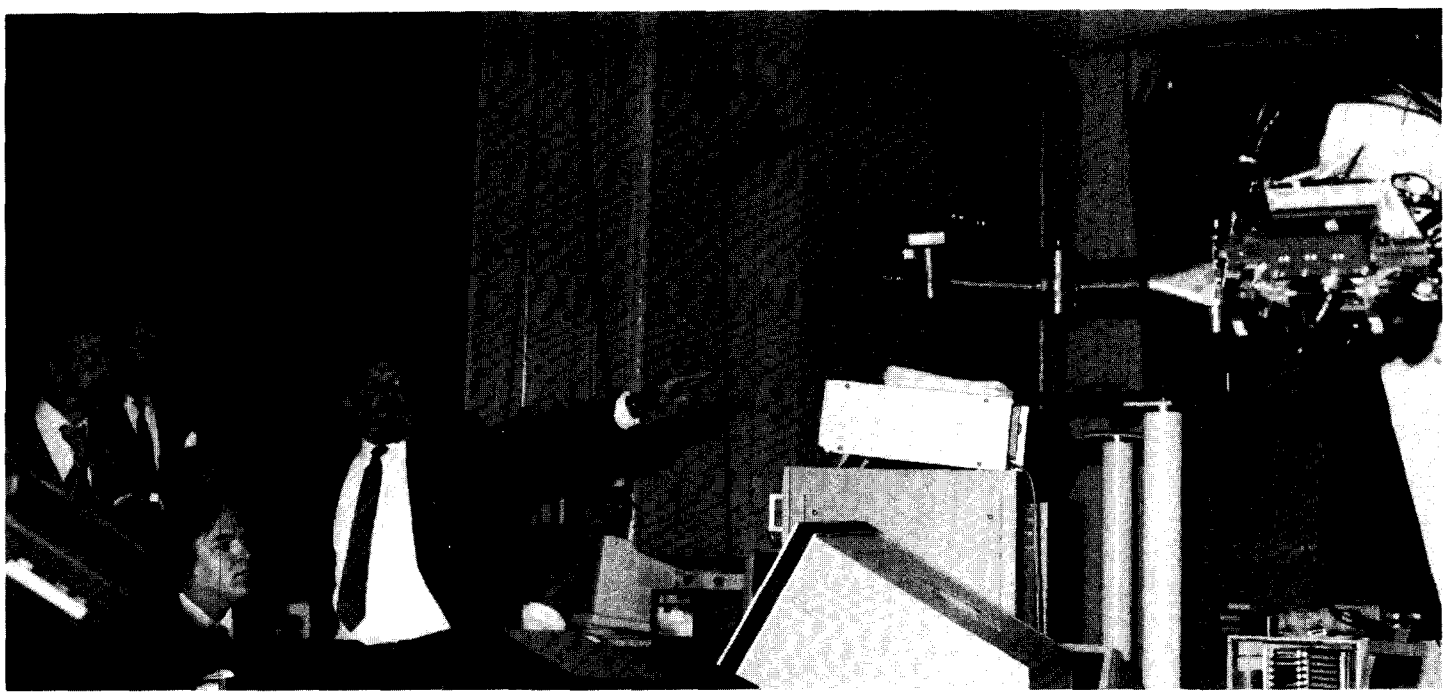
Handled Well

The crew may not have had an opportunity to operate the PRT outside the shuttle, but it was reported that in the shuttle middeck, the crew was very pleased with its handling characteristics. In fact, the PRT was featured in the NASA-wide post-mission briefing.

What makes this tool so special besides its characteristic "Cepi blue" paint (the pet color of Satellite Servicing Project Manager Frank Cepollina, according to Lewis), is that it may be programmed to accomplish fourteen combinations of torque, turns and speed. This capability allows the user to customize the tool output for several tasks.

Three Major Parts

The tool was "constructed" by four separate parties: Goddard provided technical direction, testing, crew training, management, and "mother-henning" (according to Lewis); Inland Motor Company supplied the motor and electronics; Tifco-Spline, Inc. built the geartrain; and Fairchild Space Company furnished electronics, testing, and integration services. The tool consists of three major parts, the trigger-activated wrench (the workhorse), the controller (programming and electronic guts), and a silver-zinc battery (the powerhouse). The tool is carried to and from the airlock or worksite or both in a thermally protective bag which was also designed and fabricated at Goddard.



ROYAL VISIT—Prince Michael of Kent, Queen Elizabeth's cousin, elected a recent visit to GSFC as his first choice from a list presented by his embassy. Prince Michael is shown (top left) on his last stop in the Robotics Lab with a member of his entourage. Dr. David E. Provost (top right), head of the Robotics Data Systems and Integration Section (Code 735.1) discusses the Robotics Assembly of Space Station Class Structure. Seated at front console is Arlie Long.

INSIDE

Dr. Jaylee Mead: Pioneer and Explorer

by Cheryll Madison

Dr. Jaylee Mead's interests span from galaxy to gastronomy. There are two epithets that best describe this perky, gracious southerner: pioneer and explorer. After 31 years at GSFC, Dr. Mead is truly a Goddard pioneer, as evidenced by her employee number—10! She has traveled the world, always searching for new vistas to explore, new adventures to broaden her horizons. Another apt description of this well-known scientist would depict her as having a voice like Mary Martin's, an accent like Ladybird Johnson's, and speed like A.J. Foyt's.

Dr. Mead is a dynamo. As Associate Chief of the Space Data and Computing Division (Code 930.0), she has fitted an interview into a hectic schedule that involves serving as Acting Division Chief, giving a welcoming speech to summer employees, attending a directorate staff meeting, going to the University of Maryland to participate in organizing a fall astrophysics symposium, and hosting a dinner party.

Her office is windowless, so a beautiful bouquet of flowers and a flowery linen suit brighten her environs. Her decor consists of an image of our galaxy sent by the Cosmic Background Explorer (COBE). She smiles, recalling her first call at Goddard—a request for a photo of our galaxy. That was early 1959. None existed until COBE was operational. "We couldn't obtain a picture of our galaxy until we could get off the Earth and out in space." Her demeanor is warm, welcoming, eager to explain her mission in terms that are easily understood.

Since 1959, this North Carolinean has worn many hats, but she considers her present position the best she's ever had. "I enjoy the challenge," she explained, "the excitement, the scope."

Dr. Mead's success isn't the luck of the draw. She completed her rigorous academic career with highest honors at each university she attended. She received a B.A. in mathematics from the University of North Carolina, an M.A. in education-counseling from Stanford University, and a Ph.D. in astronomy at Georgetown University.

When asked how she made her career choices, Dr. Mead revealed her guiding axiom: "If you have an opportunity, don't turn it down; make what you can of every opportunity."

PHOTO: J. WALTERS

DEEJAY OF THE STARS—**Dr. Jaylee Mead has one astronomical catalogue on her desk, but in her right hand is a CD ROM (Compact Disc Read Only Memory) that contains a "hit parade" of the 120 most requested astronomical catalogs!**

Dr. Mead did not focus on one abiding career goal. "I was truly trying to find myself at first. And I just kept exploring, rarely staying in one job more than two years," she explained.

On assuming her first Goddard job, Dr. Mead warned, "Don't expect me to stay more than two years," and she laughingly concedes, "Here I am 31 years later." She has managed to explore even when she stays put, having worked in four different scientific areas at Goddard. Her motto, "change is a good thing," has served her and her discipline well. From Theoretical Studies Branch, to the Laboratory for Optical Astronomy, to the Laboratory for Astronomy and Solar Physics, to Acting Head of the supercomputing center, to her present position, Dr. Mead has created new ways to use the computer as a tool to organize astronomical data. Her career exemplifies NASA's thesis that exploration is good in itself because spinoffs will take place that benefit mankind.

Which brings us to Dr. Mead's current focus at Goddard—deejay of the stars! With great enthusiasm, she announced that a CD ROM (Compact Disc Read Only Memory) of astronomical catalogs will be available at the end of the year. Astronomers will be able to insert the CD into readers attached to their personal computers (just as the music CDs slip into their recorders). This new disc will contain a "hit parade" of the 120 most requested astronomical catalogs. Soon, observatories will be able to insert the CD into their computer and have all these catalogues (each a thick volume) available on their computer. The ability to machine read complex data saves work hours and insures the accuracy of transcribed data.

Dr. Mead pioneered Goddard's Scientific Colloquium and has served as chair for 25 years. These weekly lectures are intended to broaden the horizons of Center scientists and acquaint them with other disciplines. Her committee consists of 12 persons who represent each laboratory at Goddard. Broadening horizons is another theme that runs through Dr. Mead's life in her search for new ideas, new solutions, and new uses of the computer.

When asked about the changing role of women in the sciences, Dr. Mead points

Continued on Page 8

CLOSE-UP

PHOTO: M. SMALL

PENDERGRASS

Congratulations to **RICHARD C. KING, Jr.**, of the Space Station Freedom Project (Code 407) who was recently appointed Deputy Project Manager/Resources... **VICKI C. PENDERGRASS** of the Advanced Scientific Computing Facility (Code 631) who was recently appointed Head of the Computer Systems Management Branch ... **DIANE E. WILLIAMS,** the former Associate Chief of the Engineering and Space Technology Resources Management Office (Code 703) who was recently appointed Chief of the Office... **GEORGE REINHARDT** who was appointed Head of the Electromechanical Systems Section (Code 716.2)...and **GEORGE GERONDAKIS** of the Shuttle Small Payloads Project (Code 740.3) who was appointed Head of the Fabrication Engineering Division.

PHOTO: M. SMALL

MADISON

The Office of Public Affairs (Code 130) welcomes two new members: **CHERYLL MADISON** and **KEITH KOEHLER**. Madison, the newest member of the Public Information Unit, brings to Goddard more than 20 years of diverse work experience—ranging from teaching, editing, writing and a stint at the White House! Before joining Goddard, Madison headed her own public relations firm. Look for Madison's stories in upcoming issues of Goddard News! Koehler, the newly appointed Public Affairs Officer at Wallops, succeeds Joyce Milliner. Koehler had been manager of the Wallops Visitor Center since 1984. Prior to that, he worked in a variety of public relations positions including two years at the Langley Research Center, Hampton, VA, as a cooperative education student.

U.S. SAVINGS BONDS

THE GREAT AMERICAN INVESTMENT

In Memoriam: Margaret Perkins (1968-1990)

Margaret "Meg" Perkins was an employee of ST Systems (STX), Code 681, who worked on the Ultraviolet Imaging Telescope (UIT) project. She was a senior at Rice University with a double physics/Russian major. On Saturday, June 2, 1990, she was attacked and killed while jogging.

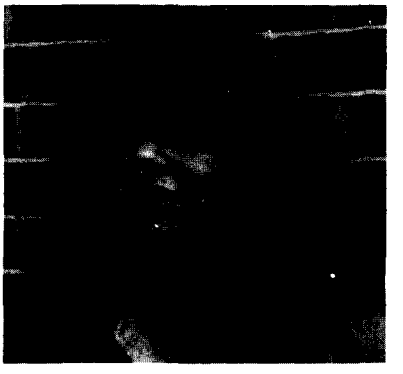
One of her co-workers, Dr. Jesse Hill, wrote:

"In the short time that the STX/UIT team were privileged to know Meg, we were all impressed by her cheerful nature and her diligent work. As the person who worked most closely with her, I can testify to the significant contributions she had already made, especially in the plans for analysis of UIT cluster data. All indications pointed to an outstanding future career—and life. We are all greatly saddened by her death. We are no less angered by the senseless, vicious cruelty it represents. Nevertheless, I will strive to remember Meg most for her short, but accomplished life, rather than the manner of its passing. It won't be easy."

Meg's parents have expressed their gratitude for Meg's opportunity to work at Goddard, and have spoken of the excitement and enthusiasm she derived from it. A scholarship fund in her memory has been established and contributions may be made to the following:

Rice University
Meg Perkins Scholarship Fund
Office of Student Affairs
Dr. Ronald Stebbings
P.O. Box 1892
Rice University
Houston, TX 77252

Hartman Receives Fellowship



HARTMAN

COLLEEN HARTMAN (Code 735.1) has received a two-year Claire Booth Luce Fellowship in Science and Engineering to support her continuing study towards a Ph.D. in physics at Catholic University. During the term of the $23,000-a-year fellowship, she will continue to work in the Goddard Robotics Laboratory. She began her NASA service at Headquarters as a Presidential Management Intern, and then served as Program Manager in the Astrophysics Division of the Office of Space Science and Applications with responsibility for the Cosmic Background Explorer (COBE), the Extreme Ultraviolet Explorer (EUVE), the Explorer Platform, Infrared Astronomical Satellite (IRAS), and Gravity Probe B. In 1986 she received an Outstanding Service Award, and from 1987-88 she held the Hugh L. Dryden Memorial Fellowship awarded by the National Space Club.

Do You Know the New Office Titles and Mail Codes at NASA Headquarters?

Headquarters Offices	Mail Code	Headquarters Offices	Mail Code
Administrator	A	Management	N
Comptroller	B	Space Operations	O
Commercial Programs	C	Public Affairs	P
Headquarters Operations	D	Safety and Mission Quality	Q
Equal Opportunity Programs	E	Aeronautics, Exploration and Technology	R
General Counsel	G	Space Science and Applications	S
Procurement	H	Inspector General	W
Small and Disadvantaged Business Utilization	K	External Relations	X
Legislative Affairs	L		
Space Flight	M		

(Effective May 1, 1990)

STS-31 Crew Salutes Goddard Team

The astronaut crew from STS-31, the Hubble Space Telescope (HST) mission paid a visit on Friday, May 25, to thank the Goddard team for a job well done. Following "home movies" taken aboard the orbiter and a slide show, a commemorative plaque was presented to the Goddard Space Telescope Project Office, Code 440. GSFC Project Manager Jim Moore accepted the award on behalf of his organization. Marshall Space Flight Center (MSFC) HST Project Manager Fred Wjotalik accepted a plaque on behalf of the MSFC team, also. The plaques each contain a U.S. flag and crew patch that were flown aboard the Orbiter Discovery, STS-31, April 24-29, 1990. It reads in part "During this mission the Hubble Space Telescope was successfully deployed to explore the Universe."

***ASTRONAUTS SALUTE GODDARD TEAM*—The Astronaut crew from STS-31 presented a commemorative plaque to HST Project Manager Jim Moore in appreciation of Goddard's role in the HST mission. From left to right: Mission Specialist Bruce McCandless II; Commander Loren J. Shriver; Mission Specialist Kathryn D. Sullivan; Mission Specialist Steven A. Hawley; HST Project Manager Jim Moore (front) and Pilot Charles F. Bolden, Jr.**

NASA
National Aeronautics and Space Administration
Goddard Space Flight Center

Goddard News

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Pioneer

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out that Goddard has the same percentage of women scientists as the ratio of women to men in the discipline. She explained that there are many more women in higher positions at Goddard than when she first came aboard, and a greater number of women are entering the computer field.

She cites the biggest change in her life at the moment involves her husband of 22 years, Gilbert, now retired, a geophysicist at Goddard for 25 years. He will take the Bar in February and graduate with fellow law students next May. "I've enjoyed following the aspects of somebody else's new career and even sharing in it," she said with pride.

The explorer in her exists even in her hobbies. Take traveling: a lifelong interest she and her husband share avidly. There is a map room in their Greenbelt condo and two world globes in her office, plus a globe of the moon presented to her on a trip to the Soviet Union. Her most exciting trip was to Antarctica, with 16 challenging landings to explore the coast and see the wildlife. She went on a camera safari to Kenya eight years ago (photography is another hobby), again part and parcel of her adventuring spirit. Her next aspiration is to visit New Zealand and Australia. Her philosophy: "Travel increases your tolerance. You quickly learn that you don't need all the daily conveniences that exist in great amounts back home."

Dr. Mead never slows down, even after her Goddard work day. After a full day's work, she not only hosts a dinner party; she cooks it! Tonight she'll prepare catfish and one of her dessert specialties, lemon mousse. Come the weekend, she'll be hosting and cooking for 30—gooey chicken ("the apricot sauce is deliciously sticky"). Always the explorer, Dr. Mead can't resist a recipe that is unusual. "I'm a dessert person, and I'm always intrigued by the chemistry of combining unusual ingredients," she mused.

Multi-talented, Dr. Mead has participated in all but the first of the 21 seasons of MAD (Music and Drama Productions) at GSFC. She (and her husband) have often starred in its musicals and always have sung a solo or duet until travel commitments made participation difficult.

Dr. Mead's focus seems to have changed over the years, but her penchant remains centered on astronomical data. In her new position, she is insuring that the data are readily available on computers. Her next milestone: to make these data available to observatories in developing nations.