

1990: A Year to Remember

It was a year of triumph and a year of challenges. 1990 may go down in Goddard history as the year *everything* happened:

COSMIC BACKGROUND EXPLORER

One of Goddard's greatest triumphs of 1990 was the Cosmic Background Explorer (COBE) which has generated remarkable data challenging theories regarding the origin of the universe. In April, COBE sent back to Earth an award-winning image of the center of the Milky Way Galaxy.

COBE completed its survey of the entire sky in infrared and microwave radiation and made unprecedented measurements of cosmic background radiation.

On September 21, COBE's helium was depleted as expected. Even without helium, COBE continues to study the universe. The success of COBE warranted Goddard's largest appreciation ceremony in November honoring more than 1,400 individuals who contributed to this project.

HUBBLE SPACE TELESCOPE

In April, the Hubble Space Telescope (HST) was successfully deployed from the Space Shuttle Discovery. Several weeks later, members of the STS-31 crew visited Goddard to thank the Goddard team for all their hard work. In June, the telescope's large mirror was found to have a spherical aberration which would prevent certain visible light observations.

Despite the problem, by August, the HST had begun unprecedented scientific work not possible from the ground. Dramatic images of Supernova 1987a, the finding of a jet structure in the Orion Nebula, and an unprecedented view of Saturn's Great White Spot demonstrate HST's ability to conduct crucial studies.

This fall Goddard became NASA's managing center for the HST project and the four servicing missions planned between 1993 and 2002.

ROSAT

In June, a cooperative mission was launched between the United States, West

Germany and Great Britain. ROSAT, the German Roentgen Satellite, carrying NASA's High Resolution Imager (HRI) instrument, managed by Goddard, was launched to study cosmic X-ray emissions. ROSAT will provide a detailed survey of the X-ray sources across the sky, followed by studies of some 1,000 of the anticipated 50,000 to 100,000 sources that will be detected. First light from ROSAT occurred on June 16-17. One of the first light images taken with the HRI shows a cluster of galaxies, which are traditionally strong X-ray emitters because of the hot gas that is swept out of colliding galaxies and accumulates between them.

ASTRO

In December, astronomers used three ultraviolet telescopes (including the Goddard managed Ultraviolet Imaging Telescope) and Goddard's Broad Band X-Ray Telescope in the ASTRO-1 payload aboard the Space Shuttle Columbia to study the high-energy universe.



A VIEW FROM ABOVE -- The Hubble Space Telescope, with the Earth below, is viewed from the Space Shuttle Discovery during deployment.

ASTRO-1 made 394 observations of 135 objects, including Jupiter and its moon Io, a comet, exploding stars, galaxies and quasars. One of the payload specialist, Ron Parise, Computer Sciences Corporation, Code 684.9, is a Goddard astronaut.

Astronauts presented the first live classroom lesson from space on December 7

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Warrior
and
Mentor

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during the STS-35, Astro-1 mission. "Space Classroom, Assignment: The Stars," focused on the electromagnetic spectrum and its relationship to the high-energy astronomy mission. Thirty middle-school students participated in the lesson from a Launch Control Room located at Goddard.

OTHER GODDARD PROJECTS

This year Goddard scientists continued to explore the stratospheric ozone over Antarctica. This ozone hole is monitored using the Total Ozone Mapping Spectrometer (TOMS), which is located aboard the NIMBUS-7 spacecraft. Data from the TOMS instrument indicates the need for further study of global change. In October, the Space Shuttle Discovery flew the Shuttle Solar Backscatter Ultraviolet (SSBUV) instrument for its second flight. SSBUV is used to calibrate ozone-detection instruments.

Back on the ground, NASA dedicated the new ground communications terminal in White Sands, NM, on January 16. The Second Tracking and Data Relay Satellite Ground Terminal (STGT) is used as backup to the existing White Sands Ground Terminal. Officials at Goddard and Contel Federal Systems, Chantilly, VA, signed an agreement transferring the title of the Tracking and Data Relay Satellite System (TDRSS) to NASA effective July 1, 1990.

WALLOPS

At Wallops Flight Facility in Virginia, scientists flew a new complement of instruments aboard a Goddard aircraft to measure the tide in the Delaware Bay. This was the first measurement of the area taken from the air. Wallops had a banner year in celebrating its 45 anniversary with a visit

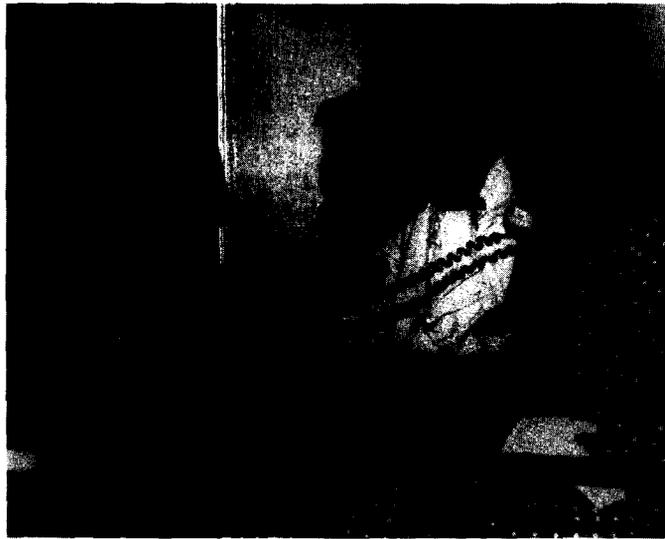


PHOTO: D. MCCALLUM

LEARNING THE EASY WAY -- Students from several local middle schools participated in "Space Classroom: Assignment the Stars" a live program taught by astronauts aboard the Space Shuttle Columbia during the Astro-1 mission. The children had the chance to talk to the astronauts and ask them questions.

from NASA Administrator Richard Truly and by having a 100% success rate with sounding rockets in 1990. The Wallops balloon program conducted a successful campaign at Lake Lynn, Canada and the Wallops Balloon Laboratory became operational.

AROUND GODDARD

Following are a few of the many events that occurred in 1990: The Goddard Child Development Center broke ground for its new addition and opened the new wing for business all in less than a year. Keeping Goddard green was accomplished by spraying to kill Gypsy Moths. Center Director Dr. John W. Townsend Jr. retired, and new Center Director Dr. John M. Klineberg joined Goddard July 1. The Equal Opportunity Program Office hosted a symposium attended by more than 50 professors and students from 18 Historically Black Colleges and Universities to discuss the

possibilities of future combined research projects. Thirty-five Goddard civil servant and contract employees received Silver Snoopy Awards for their exceptional contributions to manned space flight missions. The Spacecraft Systems Development and Integration Facility (SSDIF) opened during the summer. The 86,000 square-foot (7,989-square-meter) building is one of the largest clean rooms in the world. Goddard's Community Day, with more than 5,000 community members coming out to the Center, was so successful, plans are in the works to have two Community Days each year. The Information Technology Center celebrated its fifth anniversary. The Instrument Thermal Test Bed (ITTB), officially opened its doors in Building 4 this fall. The ITTB is a new multi-million dollar NASA test facility designed to evaluate a variety of advanced two-phase thermal control technologies.

Looking to the future, Goddard has projects on six launches in 1991: Gamma Ray Observatory (GRO), Tracking and Data Relay Satellite (TDRS)-E with Shuttle Solar Backscatter Ultraviolet Instrument (SSBUV)-3, National Oceanic and Atmospheric Administration (NOAA)-D and -I, Extreme Ultraviolet Explorer (EUVE) and Upper Atmosphere Research Satellite (UARS). For more information about these launches, see the new manifest on page four.

A REAL CUT-UP -- Cutting the ribbon that officially opened the new Instrument Thermal Test Bed (ITTB) in Building 4 on November 1, are, from left to right, Thomas Huber, Code 700, director, Engineering Directorate; Theodore Swanson, Code 732, ITTB project manager and Dr. John M. Klineberg, Center director.



PHOTO: D. MCCALLUM



U.S. SAVINGS BONDS

THE GREAT AMERICAN INVESTMENT

Launch Update: More Shuttle News

The commander and pilot for the following missions have recently been selected:

STS-48

Commander: John O. Creighton, Capt. USN

Pilot: Kenneth S. Reightler, Jr., Cdr. USN

Mission Summary: STS-48 the Upper Atmospheric Research Satellite (UARS) mission, scheduled for launch November 1991, is a Goddard project to study the Earth's upper atmosphere on a global scale. Nine UARS sensors will provide comprehensive data on energy inputs, winds and chemical composition of the stratosphere.

STS-46

Commander: Loren J. Shriver, Col. USAF

Pilot: James D. Wetherbee, Cdr. USN

Mission Summary: STS-46 the Tethered Satellite (TS) mission, scheduled for March 1992. TS will be deployed from the orbiter payload bay on an approximately 12-mile tether where it will collect electrodynamic data in the upper reaches of the Earth's atmosphere. Also, the European Retrievable Carrier (EURECA), a free-flying reusable platform dedicated to material science and life science experiments, will be deployed.

STS-49

Commander: Daniel C. Brandenstein, Capt. USN

Pilot: Kevin P. Chilton, Maj. USAF

Mission Summary: STS-49 the Intelsat mission, scheduled for launch in May 1992, is a flight on which crew members will attach a new booster and redeploy the Intelsat satellite. This will be the first flight for the new orbiter Endeavour.

STS-50

Commander: Richard N. Richards, Capt. USN Pilot: John H. Casper, Col. USAF

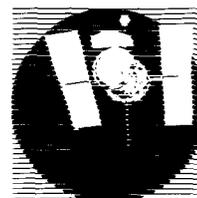
Mission Summary: STS-50 the United States Microgravity Laboratory (USML)-1 mission, scheduled for June 1992, is a complement of microgravity materials processing technology experiments to be flown on the first extended duration orbiter mission aboard Columbia. This mission is planned for a 13-day duration, the longest shuttle mission to date.

NASA Pipeline

HEADQUARTERS, Washington, DC -- Following a meeting between NASA Administrator Richard H. Truly, his senior managers and Chairman Norman R. Augustine and a majority of the other members of the Advisory Committee on the Future of the U.S. Space Program, Truly announced that he was immediately acting on two of the committee's recommendations. A new Office of Exploration under an associate administrator will be created to lay out options to meet the challenges of returning to the moon and exploring Mars. A new Office of Human Resources also will be created to insure that NASA has the engineering, scientific and administrative talent necessary to fulfill its missions.

STENNIS SPACE CENTER, Bay St. Louis, MS -- Twelve research projects recently were selected to develop new private sector applications of space-based and airborne remote sensing technologies. The program, sponsored by NASA's Office of Commercial Programs (OPC) and managed through OPC at Stennis, will fund over \$2 million of research annually. Funding for the Earth Observations Commercialization Applications Program (EOCAP) projects represents a continuation of a program aimed at increasing broader use of NASA-developed technology for gathering and analyzing valuable information about Earth and ocean resources through remote satellite or aircraft observations.

HEADQUARTERS, Washington, DC -- The Integrated System Preliminary Design Review (ISPDR) for Space Station Freedom, a major milestone leading to the construction, launch and assembly of the station, was completed on schedule this week marking the end of a year-long assessment of Freedom's preliminary design. More than 80 separate design reviews were conducted at NASA centers and contractor facilities to ensure Freedom's preliminary design could satisfy requirements for safety, physical and functional compatibility and for its ability to be built, integrated with other hardware and tested.



Greenbelt Visitor Center Events for February

The Visitor Center is open to the public five days a week, Wednesday through Sunday from 10:00 a.m. to 4:00 p.m., closed all federal holidays. The Visitor Center is "user friendly" and accessible to individuals with disabilities. For more information call (301) 286-8981.

Launch Site Goddard -- Sunday, February 3 and 17, 1:00 p.m. More than 1,500 rockets are launched yearly from the grounds of the Visitor Center. Even in the winter months, you are invited to come out to watch the rockets fly.

Saturday Videos -- Saturday, February 9, 1:00 p.m. View "Legacy of Gemini" a documentary film illustrating the major accomplishments of the Gemini two-person spaceflights and the significance of these flights on the Apollo program. The

film includes spectacular photography of the Earth from space.

Know and Tell -- Sunday, February 24, 1:00 p.m. "Earth Photography from Early Space Missions" -- Join Dr. Paul D. Lowman Jr. of Goddard's Laboratory for Terrestrial Physics, as he explains the evolution of the remote sensing Landsat satellites, to the Earth Observing System platforms which will provide global and long-term continuous measurements for monitoring the entire planet.

Star Watch -- Saturday, February 9, 7:00 p.m. to 9:00 p.m. The Visitor Center will open its doors for a glimpse at the night sky. Winter offers some of the most beautiful skies of the year. Star Watch is held on the Visitor Center grounds and will be cancelled in the case of inclement weather.

January '91-Mixed Fleet Manifest

Space Shuttle

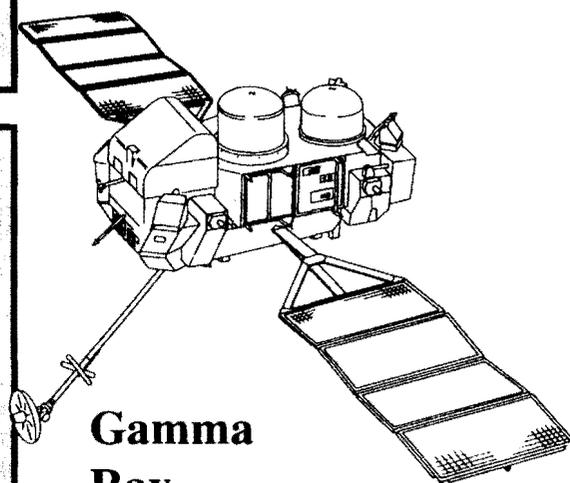
Flight	Date/ Orbiter	Primary Payloads
39	3/91 <i>Discovery</i>	AFP-675 / IBSS
37	4/91 <i>Atlantis</i>	GRO*
40	5/91 <i>Columbia</i>	SLS-01
43	7/91 <i>Discovery</i>	TDRS-E* / SSBUV-03*
44	8/91 <i>Atlantis</i>	DSP
48	11/91 <i>Discovery</i>	UARS*
42	12/91 <i>Atlantis</i>	IML-01 / IMAX-05

46	3/92 <i>Discovery</i>	TSS-01/ EURECA-1L / IMAX-06
45	4/92 <i>Atlantis</i>	ATLAS-01 / SSBUV-04*
49	5/92 <i>Endeavour</i>	INTELSAT-VI-R / ASEM
50	6/92 <i>Columbia</i>	USML-01
51	8/92 <i>Atlantis</i>	AGIS / CANEX-02 / DXS
47	9/92 <i>Endeavour</i>	SL-1
52	10/92 <i>Columbia</i>	LAGEOS II* / EURECA-1R
53	11/92 <i>Discovery</i>	DOD

54	1/93 <i>Endeavour</i>	SPACEHAB-01
55	2/93 <i>Columbia</i>	SL-D2
56	3/93 <i>Discovery</i>	WSF-01 / FTS-DTF-01*
57	5/93 <i>Endeavour</i>	ATLAS-02 / SSBUV/A-01*
58	5/93 <i>Atlantis</i>	TDRS-F*
59	6/93 <i>Columbia</i>	SPACEHAB-02
60	7/93 <i>Discovery</i>	HST REV-01*
61	9/93 <i>Endeavour</i>	SRAD/TPITS / HPE*
62	9/93 <i>Atlantis</i>	LITE

Expendables

Date Yr Mo	Launch Vehicle Type	Payload
91 03	SCOUT	PROFILE
91 05	ATLAS E	NOAA-D*
91 08	DELTA II	EUVE*
91 12	ATLAS E	NOAA-I*
92 02	ATLAS I	GOES-I*
92 06	SCOUT	SAMPEX*
92 07	DELTA II	GEOTAIL*
92 09	TITAN III	MARS OBSERVER
92 10	ATLAS I	GOES-J*
92 12	DELTA II	WIND*
93 06	DELTA II	POLAR*
93 09	TBD	TOMS*
93 11	ATLAS E	NOAA-J*



**Gamma
Ray
Observatory
Launch --
April '91**

* identifies a Goddard Mission

FUTURE BOUND

Payload / Acronym List

ACTS Advanced Communications Technology Satellite	GRO Gamma-Ray Observatory	SL-D2, -D3 Spacelab D2, D3
AFP-675 Air Force Program-675	HPE Heat Pipe Experiment	SL-J Spacelab J
ASEM Assembly of Station by Extravehicular Activity Methods	HST REV Hubble Space Telescope Revisit	SLS Space Life Sciences Laboratory
ATLAS Atmospheric Laboratory for Applications and Science	IBSS Infrared Background Signature Survey	SRAD/TPITS Shuttle Radiator Assembly Demonstration/Two Phase Integrated Thermal System
CANEX-02 Canadian Experiments-2	IML International Microgravity Laboratory	SSBUV Shuttle Solar Backscatter Ultraviolet Instrument
DSP Defense Support Program	INTELSAT-VI-R INTELSAT-VI-Reboost	TDRS Tracking and Data Relay Satellite
DXS Diffuse X-ray Spectrometer	LAGEOS Laser Geodynamic Satellite	TOMS Total Ozone Mapping Spectrometer
EURECA European Retrievable Carrier	LITE Lidar In-Space Technology Experiment	TSS Tethered Satellite System
EUVE Extreme Ultraviolet Explorer	MARS OBSERVER Spacecraft to study the surface, climate, gravitational and magnetic fields of the planet Mars	UARS Upper Atmosphere Research Satellite
FTS-DTF Flight Telerobotic Servicer Demonstration Test Flight	NOAA National Oceanic and Atmospheric Administration	USML United States Microgravity Laboratory
GEOTAIL NASA-Japan cooperative mission to explore the physics of the plasma in the Earth's geotail.	POLAR Polar Auroral Plasma Physics spacecraft	WIND Satellite to measure solar wind input to magnetosphere
GOES Geostationary Operational Environmental Satellite	PROFILE Navy Satellite	WSF Wake Shield Facility
	SAMPEX Solar, Anomalous and Magnetospheric Particle Explorer	

Star Bright: A New Look at an Old Star

Out in the far reaches of space, a speck of dim light suddenly flares, growing brighter and brighter; a star is exploding. If astronomers are lucky, someone is looking in the right place at the right time as the supernova evolves. But finding a supernova is rather like finding a needle in a haystack. "There are tens of thousands of galaxies, and you don't know when a supernova is going to appear...It's more or less by chance when these things are discovered," said Dr. George Sonneborn, Code 681, acting head of the astronomy branch in the Laboratory for Astronomy and Solar Physics.

The study of supernovae had a lucky break on June 22 when astronomers at the Observatoire de la Cote d'Azur (OCA) in France discovered SN1990N while taking exposures of galaxy NGC 4639 located in the constellation Virgo. A formal announcement was made of the discovery on June 26 and later that afternoon Sonneborn began observations using Goddard's International Ultraviolet Explorer (IUE).

"The advantage that IUE has is that it can respond very quickly...because we are observing in real time...we have tremendous flexibility in making observations," said Sonneborn. What makes this supernova different from others is that it was found and observed for about ten days before it reached its ultraviolet (UV) maximum on July 6. "This is the first one we've been able to study in this kind of detail. It's completely new information," said Sonneborn. "We have never observed a supernova like this before it reached maximum brightness."

In the two weeks before maximum, SN1990N doubled its level of UV energy every two days. After maximum, and for the nine days IUE continued to make readings, the level of UV energy decreased slowly, it did not lose energy at the same rate it gained energy. IUE could only take readings of SN1990N for about three weeks. After that, because of Earth's position near the sun, IUE could no longer study the supernova.

SN1990N is a classic example of a Type Ia supernova. Astronomers study supernovae for a variety of reasons from estimating distances of galaxies very far away, to understanding more about galaxy formation by studying the elements synthesized in a supernova. "Supernovae are tied to very many astronomical themes from interstellar gas to star formation to the origin of many chemical elements," Sonneborn said.

Because they are seeing a supernova earlier than ever before, astronomers are observing behavior new to them, but Sonneborn suspects all Type Ia supernovae react like this. Only time will tell if he is right. Despite the luck involved in discovering a supernova, more than 30 have been found this year, but only two have been bright enough to observe with IUE. Still, with all of the observations of SN1990N, that gives Sonneborn and other astronomers a lot of data to work with.

INSIDE

Bernard Dixon: Warrior and Mentor

by Cheryl Madison

Bernard Dixon, a supervisory operations resource analyst, Code 152, is a gentle giant of a man. The silver in his black hair reflects the duality of his nature: warrior and mentor. He holds the fourth degree black belt and the first level of master teacher in Tae Kwon Do, a Korean martial art, which has shaped his life for twenty years. Dixon lives by the Warrior's Code of generosity, care, courage, commitment, and clarity.

Dixon is committed to the framed calligraphed quote of Teddy Roosevelt above his desk, "The credit belongs to the man who is actually in the arena; whose face is marred with sweat and dust and blood...who, if he wins, knows the triumph of high achievement, and who, if he fails, at least fails while daring greatly, so that his place shall never be with those cold and timid souls who know neither Victory nor Defeat." As Dixon grows more committed to the warrior code, he also grows in his mentoring at Goddard.

Dixon, a native of Newport, TN, near the Smoky Mountains, and valedictorian of his high school there, attended Knoxville College in Knoxville, TN, on an academic and football scholarship. He studied chemistry for two years before transferring to Geneva College, Beaver Falls, PA, for his B.A. in mathematics. He continued his graduate studies both at Catholic University, Washington, DC, in mathematics, and at the University of Maryland, College Park, MD, in astronomy and physics. He resides in Laurel, MD.

A man of action, Dixon replied to a NASA advertisement and 23 years ago, began working, warring, and mentoring at Goddard.

Enjoyable Jobs

Dixon muses, "There are very few days I've regretted my commitment to Goddard, which is like an open campus, combining the best of academia and work." Dixon smiles, "I've enjoyed all of my jobs at Goddard."

Dixon began work at Goddard in the Missions Operations Directorate, developing orbit determination analyses programs. He helped develop the Goddard Trajectory Determination System (GTDS), which has become the standard for the aerospace industry. The GTSD is a very comprehensive system with several numerical processors, to determine different orbits in spaceflight and several planetary models of the forcefields of the Sun, Earth and Moon.



PHOTO: D. MCCALLUM

Bernie Dixon, Code 152, a mathematician, sits in front of his blackboard displaying his award-winning cost estimating formula for early starts, and smiles while explaining his credo, "You must continually get involved, take a chance, and put yourself at risk."

In 1977, Dixon moved to the Resource Analysis Office, a division of the Office of the Comptroller. As a Senior Analyst, he was involved with several major new start projects, including the Cosmic Background Explorer (COBE), the International Solar Terrestrial Program (ISTP) and the Upper Atmosphere Research Satellite (UARS).

Presently, Dixon is the Supervisory Operations Research Analyst for the Resource Analysis Office, responsible for developing and applying cost and manpower models in order to provide independent estimates of cost, manpower requirements, and risk for major space efforts at Goddard.

Dixon explains, "There is a vital need to understand early what future missions will cost, for budgetary and management purposes." There is some math in his job, but Dixon admits, "Understanding and communicating is more important than manipulating math and statistics."

Dixon feels that his present job is to try to help the project managers to get the resources--in dollars, time, and people--to carry out the engineering and the science objectives of the mission. He laments, "Sometimes we seem to be in an adversarial role, because, in the course of our work, we criticize the project for not asking for enough resources." Also, Dixon is currently a member of the steering committee of Goddard's Total Quality Management Program, which studies ways to bring the whole work force to bear on a set of problems.

Dixon is an enthusiastic mentor in the American Society for Engineering Education, the Summer High School Apprenticeship Program, and the Summer Institute in Computer Applications at Goddard. He explains his interest in mentoring stu-

dents, "You get a chance to grow your own, to influence your own, to build enthusiasm and motivation that lasts for a lifetime." Dixon comments, "We always end up wanting to keep our apprentices at Goddard, and we want them to feel the same way."

The Warrior

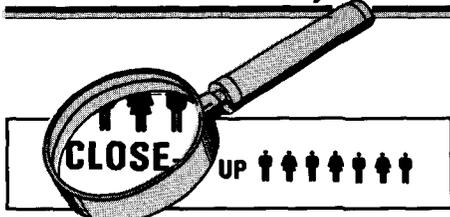
Dixon also mentors in his warring--for Tae Kwon Do is a performing art learned under the guidance of a master. Dixon, a member of the United Tae Kwon Do Union and a master teacher, serves as a continental referee and coaches in the Junior Olympics and the national level competitions.

Dixon feels strongly that Tae Kwon Do teaches one "not just to practice in a relatively safe, controlled environment but actually to try out the techniques in the arena." Dixon philosophizes, "It is important to get a measure of yourself and to live with that measurement, to understand and accept it."

Dixon's outlook on life is that one must continually get involved and take a chance.

Dixon is the proud father of four children. His two daughters, Valerie and Stephanie, are accountants. Son Jeffery rides the rodeo circuit, where he takes part in the toughest and most unforgiving contests--the bronco and the bull busting. He also trains racehorses at Laurel. Youngest son, Rodney, is a landscaper.

Dixon is a 1987 recipient of Goddard's Exceptional Achievement Award, for developing early cost estimates for UARS, COBE, and Explorer Payloads. In 1990 he received the NASA Exceptional Service Medal, for developing the Multivariable Instrument Cost Model.



Congratulations to the following employees on their recent appointments:

ABIGAIL D. HARPER, Chief of the Assurance Management Office, Code 303 ... **ORLANDO FIGUEROA**, Small Explorer



HARPER

Project Manager, Code 701 ... **JOHN H. DAY, JR.**, Assistant Branch Head of the Space Power Applications Branch, Code 711 ... **RICHARD COSTA**, Deputy Director of Mission Operations and Data Systems, Code 500 ... **JEFF**

DOZIER, Earth Observing System (EOS) Project Scientist, Code 900 ... **DR. JERRY**

SOFFEN, Director of University Programs, Code 160. Congratulations to **DR. JOANNE SIMPSON**, Chief Scientist for Meteorology, Code 900. Simpson, who has been with Goddard since 1979 and is a Goddard Senior Fellow, was awarded an honorary doctorate from the State University of New York at Albany.



COSTA

PHOTO: D. MCCALLUM

"Festival of Life" For the Health Conscious

by Jessie Katz

Nearly 400 people recently attended the "Festival of Life," sponsored by the Goddard Fitness Lab. More than a dozen health-related activities and displays were available at the event in the Building 8 auditorium.

"The most popular things were...the body composition assessment, the nutritional assessments, the massage therapists, and of course, the food," according to John Gilligan, director of the Fitness Lab and organizer of this year's fair. At least 50

people signed up for a seated massage, keeping the massage practitioners from the Potomac Massage Training Institute busy throughout the four-hour event.

Gilligan would like to see even more people attend next year's health fair "to be inquisitive about the health services available at Goddard...that is really an important part of running a truly dynamic and healthy work environment. I would like to see all of Goddard become health conscious," Gilligan said.

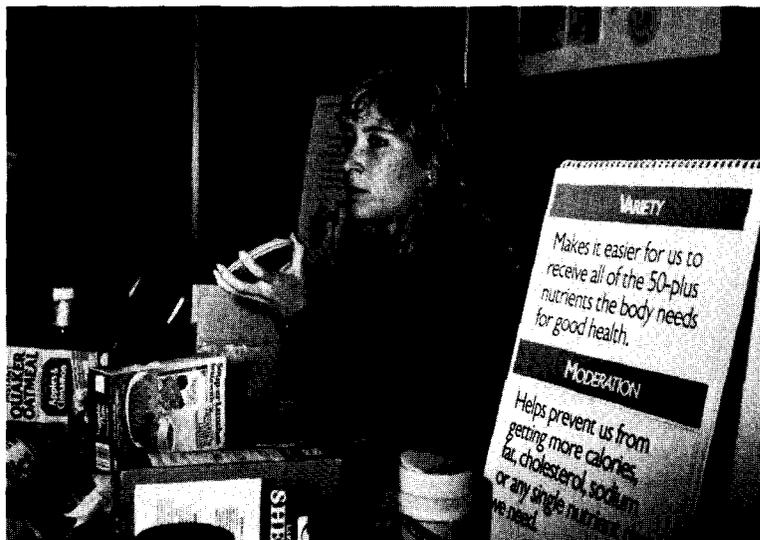


PHOTO: M. SMALL

FOOD FOR THOUGHT -- At the GSFC Health Fair, Beth Blumberg, Canteen Corporation Regional Dietitian, explains how to find the percentage of fat calories in food using nutrition information on labels.

NASA Trivia

Extra vehicular activities (EVAs) are going to become more and more important as we establish a permanent presence in space.

1. What is the record for the longest time an astronaut has spent in EVA? (Hint: The record is a tie between two astronauts)
2. Name the record holders.
3. Name the mission.

Trivia Answers:
 1. 22 hours 4 minutes
 2. Eugene Cernan, Harrison (Jack) Schmitt
 3. Apollo 17; December 7 - December 19, 1972

GIVE

On December 5, the Bloodmobile was held in the Building 8 auditorium and 186 prospective donors volunteered to donate blood. The following is a list of Goddard employees who were cited by the American Red Cross with gallon pins at the Bloodmobile.

# Gallons	Name	Code
1	David Lee Amason	733
4	Leonard Brown	752
3	Joe King	050
2	Timothy Klein	430
1	Cathy Long	
1	Jill Lukoschek	
7	Ron Miller	400
7	Ron O'Leary	731
2	Chris Padgett	251
3	Robert Plastine	403
1	Rosalee Price	410
6	Wyatt Rinker	750
3	Jeffrey Robel	562
3	Richard Sackett	302
4	Paul Trahan	750

The next Bloodmobile is scheduled for February 6 in the Building 8 auditorium. Watch Dateline Goddard for more details.



Solar X-Ray Project Introduces Argentina to NASA

by Susie Marucci



What do the warm, beautiful climate of Argentina and the cold, blustery days in Greenbelt have in common? Quite a lot. In November 1989, Goddard's International Projects Manager, Gil Ousley Sr., Code 404, took a group of scientists from different areas of America to Argentina. The trip was to initiate a joint study to see how both countries could work together on a secondary payload satellite which will study X-rays.

Ousley, who is also the American study manager for the project, met with the project manager from the Comision Nacional de Investigaciones Espaciales (CNIE), Argentina's space agency. Ousley's group then met with the President of Argentina, Carlos Menem, to discuss working together to put Argentina's first satellite in space. The meeting was a very successful one, according to Ousley. "The President said he was looking forward to working with

NASA...He was especially interested in this because he has a personal interest in space," said Ousley. "He was really anxious to have the Argentines do their first space project with NASA," he added.

Involvement with CNIE began two and a half years ago, when NASA held a competition for Scout payloads. Of 54 proposals, the Argentine one was in the top five, but only the top three were chosen. According to Ousley, NASA officials were so impressed with the Argentine proposed payload they began talks with the Argentines about working together on the project.

The six month study ended in April. The decision has been made to go ahead with the project, titled the Scientific Applications Satellite (SAC) - B. The satellite should be launched around October 1993. While it could be launched on either a space shuttle or an expendable launch vehicle (ELV), Ousley thinks, when the time comes, the satellite will go on an ELV.

The report that Ousley worked on with his American team and the Argentines actually proposed two satellites. The payload that will go up in 1993 is the first one proposed in the study and not the original payload from the competition. Follow-on missions will be discussed during a NASA/CNIE joint workshop to be held February 13 at NASA Headquarters in Washington, DC.

The Argentine satellite will be comprised of two experiments. The first will be provided by the Argentine's and will study solar X-ray radiation. The second will be an American experiment to study cosmic background X-ray radiation. This will be funded by NASA, and built by the University of Pennsylvania. NASA's other responsibilities are to provide the launch vehicle, and to provide an advice and review team for the satellite. That's where Ousley comes in. His team will travel back to Argentina in mid-1991 for a preliminary design review. After that will be a formal design review scheduled for September. Then, the satellite will be built, the parts integrated and thoroughly tested as if SAC-B were in space. These phases of the process should take about a year and a half.

Ousley expects this to be one of the most enjoyable projects he has worked on for a long time. He also said that the biggest challenge in building the satellite is not in dealing with a foreign country in a brand new space venture, but in getting the satellite built on time. If a secondary payload is late, the launch takes place without it. And unlike taking a bus, if the launch is missed, SAC-B cannot just hop on another vehicle.

CENTER SIDE Lines

GSFC PARTICIPATES IN NASA'S FIRST TECHNOLOGY TRANSFER CONFERENCE -- Goddard scientists and engineers delivered 18 out of 98 papers and provided two out of the 150 exhibits at TECHNOLOGY 2000, the first industrial exposition and conference to showcase the transfer of NASA technology to American business, according to Donald S. Friedman, Chief of Commercial Programs at Goddard. The two-day symposium took place November 27-28 at the Washington Hilton Hotel in Washington, D.C. Dr. D. Allan Bromley, Assistant to the President for Science and Technology, presented the keynote address, and NASA Administrator, Admiral Richard Truly, opened the sessions.

DEAR SANTA: I HAVE BEEN A GOOD BOY MOST OF THE TIME -- So began a letter to Santa from Christopher Preston, one of the more than 350 children to attend Goddard's Children's Holiday party on December 8. The party, which was sponsored by the Goddard Employee Welfare Association (GEWA), included a cartoon theater, clowns and a magician. "It was a great success," said Darlene Ahalt, Code 130. Ahalt coordinated the party for the happy, excited youngsters. "You don't see this kind of energy in one place that often," Ahalt said.

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