GODDARD NEWS March 1973 Vol. 20, No. 12

SAS FROJECT MANAGER Marjorie R. Townsend (right) chats with Mrs. Patricia Reilly Hitt, Assistant Secretary of Health, Education and Welfare following the announcement that Mrs. Townsend would be one of six women to receive the 13th annual Federal Woman's Award.

Mrs. Townsend Receives Federal Woman's Award

Marjorie R. Townsend, Project Manager of the Small Astronomy Satellite (SAS), was one of the six women to receive the thirteenth annual Federal Woman's Award.

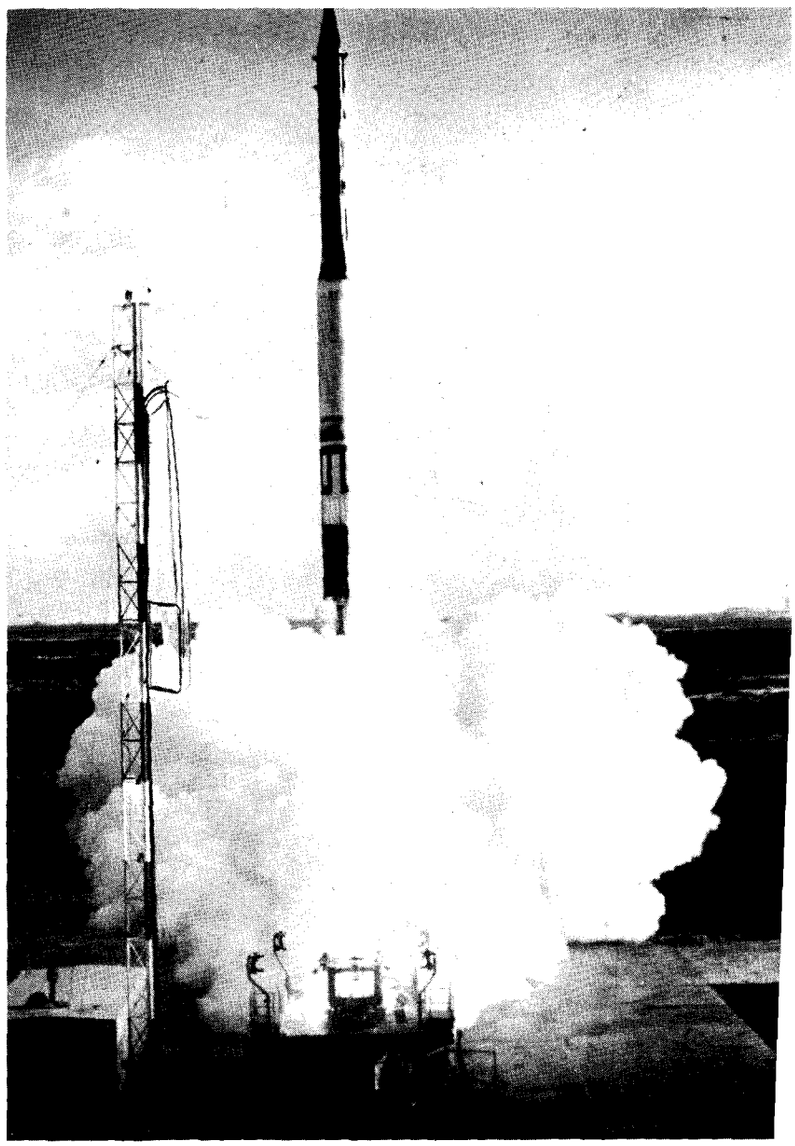
The winners, nominated by their agencies and chosen by an independent panel of judges, were honored for their outstanding contributions to the quality and efficiency of the career service of the Federal Government, for their influence on Government programs, and for personal qualities of leadership, judgment, integrity and dedication. They received their awards at a banquet held in their honor on March 6, 1973, at the Shoreham Hotel in Washington, D.C.

Mrs. Townsend joined NASA in 1959 and has been SAS Project Manager at Goddard since 1966. Under her direction, the project has uccessfully launched two satellites from the Italian-operated San Marco launch platform off the Coast of Kenya.

The Federal Woman's Award program is the only one in the Federal Government which is exclusively for women. It is Government-wide and nationwied in scope. It has a threefold purpose: to give public recognition to outstanding career women in Government service, to call public attention to the many kinds of important work that women are doing, and to interest talented young women in pursuing Federal careers.

The Federal Women's Award was founded in 1960, and the first awards presented in the spring of 1961. The award program is administrated by a board of trustees composed of 12 members located in Washington, D.C. The board is an independent body having no official connection with the government.

Other recipients of the Federal Women's Awards for this year were: Mrs. Bernice L. Bernstein, Direcor, Region II of the Department of Health, Education and Welfare; Dr. Marguerite S. Chang, a research chemist in the Naval Ordnance Systems Command; Janet Hart, Assistant Director of the Division of Supervision and Regulation, Board of Governors of the Federal Reserve System; Dr. Marilyn E. Jacox, a research chemist at the National Bureau of Standards; and Dr. Isabella L. Karle, a Research Physicist in the Navy's Office of Naval Research.



ST. PATRICK'S DAY has special meaning for many people at Goddard. On that day in 1958, the Naval Research Laboratory successfully launched Vanguard-1. Events leading to the launch did not go smoothly for members of the Vanguard team, many of whom became the nucleus of the first staff at Goddard. For the story, see page 2.

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Next Month will see the anniversaries of two highly successful Nimbus satellites—Nimbus-3 launched on April 14, 1969, and Nimbus-4 launched on April 8, 1970. For a brief history of these and other spacecraft in the program, including Nimbus-5 launched last December, see pages 3, 4, 5, and 6.

We've Come a Long Way from TV-3

The nation was watching on December 6, 1957, when TV-3, an early rocket in the Vanguard series lost thrust two seconds after ignition and exploded on the launch pad, its six-inch payload still sending signals.

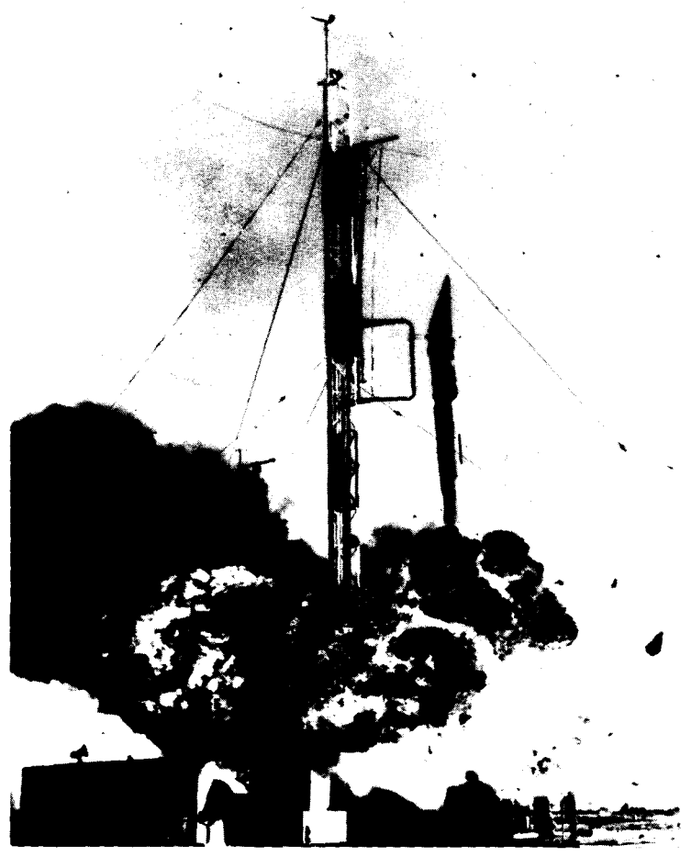
For most Americans, the explosion was hailed as a failure to "catch up" with the Russians who had already launched the world's two first satellites—Sputnik-1 on October 4, 1957 and Sputnik-2 on November 3, 1957.

For members of the Vanguard team, the launch should have been just one more test in a carefully plannned project aimed at launching a small scientific satellite as part of U.S. participation in the International Geophysical Year (IGY) of July 1957 through December 1958. Instead, the team was caught up in the furor of a nation that found itself suddenly second place in a "space race" that had barely started.

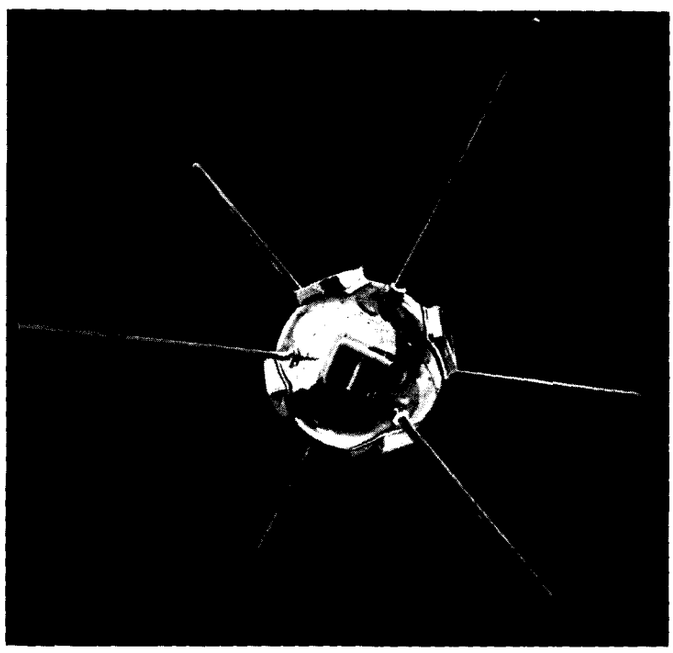
While Project Vanguard, under pressure to get into space as soon as possible, went on with plans for their next test, a joint Army/JPL team was given permission to try and launch a scientific IGY satellite to be called the Explorer. Using the flight-proven Jupiter-C missile and a payload designed by James A. Van Allen, this team succeeded in launching their 30.8 pound paylad on January 28, 1958 (*Goddard News*, February 1973).

Finally in the morning of March 17, 1958, Vanguard-1 achieved orbit in a perfect launch from Cape Canaveral, Florida. The small—3½-pound, 6.4-inch—satellite continued to broadcast signals until January of 1965 and is expected to remain in orbit for at least 200 and possibly 2,000 years. Data from the satellite revealed that the earth is slightly pear-shaped.

Vanguard-1 was launched only two years and six months after the project began. The team from the Naval Research Laboratory, men and women who later became the core of the first staff of the Goddard Space Flight Center when it was established in 1959, had achieved an important launch in record time. Starting from scratch, they designed and tested a complex, three-stage launch vehicle, established the world-wide Minitrack network, and provided for a launch facility and range instrumentation. Their teamwork has become a standard for Goddard.



TV-3, the first complete Vanguard Test Vehicle, exploded on the launch pad on December 6, 1957. Its small payload was thrown free and continued sending signals while the rocket burned.



VANGUARD-1

Lunar Science Conference

Dr. Isidore Adler and Dr. Jacob I. Trombka, of the Theoretical Studies Branch; Dr. John A. Phillpotts and Dr. David F. Nava, of the Planetology Branch; and Dr. John Lovering, a Research Associate in the Planetology Branch were among the some 750 scientists who took part in the fourth annual Lunar Science Conference held March 5 through 8 at the Lyndon B. Johnson Space Center in Houston, Texas.

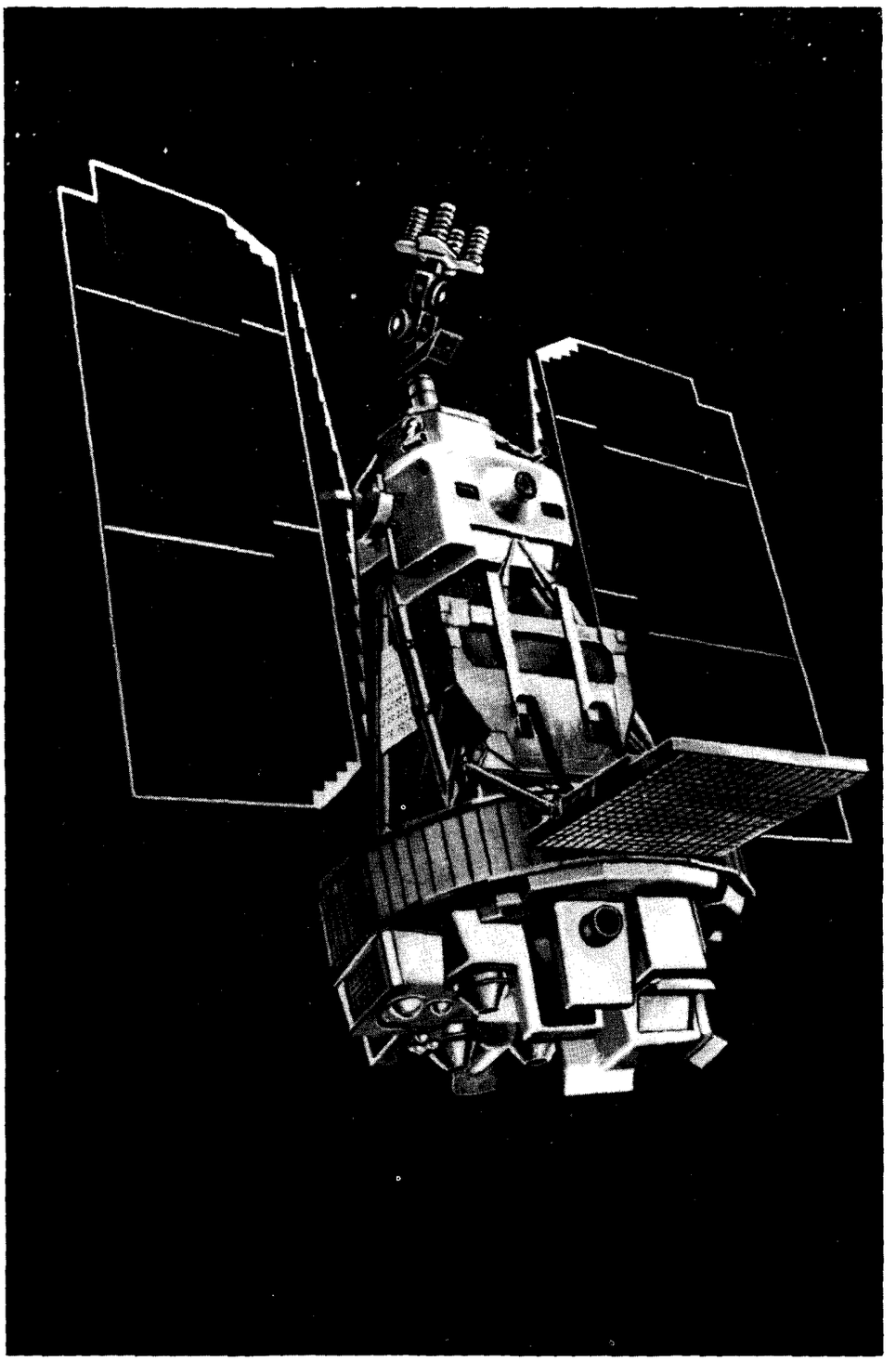
Principal investigators from the United States and a dozen of the foreign countries which have participated in the lunar scientific research phase of Project Apollo presented more than 250 papers in the four-day session, including the preliminary results from Apollo 17—the final Apollo lunar exploration mission.

Scientists from the Soviet Union also presented papers on their analyses of exchanged Apollo samples.

Topics to be covered by conference sessions ranged widely through several lunar scientific disciplines. Among the session topics were Origin and Interior Structure of the Moon, Where and When are Lunar Magmas Formed, Origin and Time of Formation of Lunar Breccias and Moon/Sun/Space Interactions.

The results from the final two Apollo lunar landing missions have raised many questions about the early evolution of the lunar crust and highlands, and the conference was the first opportunity for scientists to compare their widely-varying interpretations.

Nimbus Highlights: A Brief History of Goddard's Weather Eye



NIMBUS-5 (artist concept), the latest satellite in Goddard's series of orbiting weather laboratories.

Thanks to Goddard's Nimbus satellites, meteorologists can receive automatic cloud cover pictures from orbiting satellites, "see" electromagnetic radiation from the earth's surface, measure the verticle temperature of the atmosphere and detect changing patterns of ocean currents.

These are only a few of the capabilities made possible by a satellite program designed to test out advanced sensors for weather research. Initially conceived to provide atmospheric data for improved weather forcasting, data from Nimbus spacecraft are now being used in other earth sciences including oceanography, hydrology, geology, geomorphology, geography and cartography. The recently launched Nimbus-5, latest satellite in the series, is also providing data on atmospheric moisture, soil moisture, and sea ice patterns.

Sensors developed by Nimbus have been used aboard spacecraft in the TIROS/ESSA/NOAA series of operational satellites, and Nimbus spacecraft will provide temperature sounding of the earth's atmosphere and tropical wind information for the Global Atmospheric Program (GARP). With the launch of the first Earth Resources Technology Satellite (ERTS) on July 23, 1972, Nimbus gave birth to a new generation of research spacecraft. Both ERTS and Nimbus share the same basic design structure including the same sub-systems for temperature control, power, attitude control and command.

The Nimbus Satellites

The Nimbus Project got underway with the launch of Nimbus-1 from the Western Test Range on August 28, 1964. Although the pioneering spacecraft operated for only one month, it proved that a weather satellite could maintain three-axis stability and earth orientation and provided the first high resolution television and infrared weather photos from orbit. The satellite carried three experiments—an Automatic Picture Transmission (APT) camera, an Advanced Vidicon Camera Subsystem (AVCS), and a High Resolution Infrared Radiometer (HRIR). The APT camera system made possible for the first time the reception of weather pictures by small, inexpensive ground stations as the satellite passed overhead. "News" from Nimbus-1 included many pictures of tropical storms and pictures that enabled cartographers to correct existing maps of Antarctica.

By the time Nimbus-2 was launched on May 15, 1966, the number of APT stations around the globe had grown from 65 to over 300, and the APT system had been modified to make possible the 24-hour reception of HRIR (infrared) pictures. The spacecraft carried the same systems as Nimbus-1 with the addition of a Medium Resolution Infrared Radiometer (MRIR) for detecting electromagnetic radiation emitted and reflected from the earth in five spectral bands from the visible to the infrared. This data per-

(Next Page)

THE NIMBUS SATELLITES

THE BOSS ATTENDS an ERTS/Nimbus staff meeting. Robert Lindley (fourth from left) sits in on a recent meeting in Project Manager Stan Weiland's office. From left are Archie Ansel, Project Support; Joe Arluskas, Experiment Manager; Lou Gonzales, ERTS Ground Station Manager; Robert Lindley, Director of Projects; Stanley Weiland, ERTS/Nimbus Project Manager; John Boeckel, Deputy Project Manager; Gilbert Branchflower, ERTS Spacecraft Manager; Leonard Hardis, Project Coordinator; and George Hogan, Nimbus Spacecraft Manager. Ralph Shapiro, Nimbus Operations Manager is not shown.

mitted detailed study of the earth's heat budget. The spacecraft was turned off early in 1969.

Meteorologists took a giant step forward in the long-range forecast of the earth's weather with the launch of Nimbus-3 on April 14, 1969. This spacecraft carried seven experiments plus a SNAP-19 nuclear isotope system for generating electrical power. The atmospheric temperature profiles needed for long-range forecasts were made possible by the Satellite Infrared Spectrometer (SIRS) and the Infrared Interferometer Spectrometer (IRIS) on board. SIRS measured infrared spectral radiances in narrow intervals of the carbon dioxide absorption band, and IRIS provided data on temperature, humidity and ozone distribution in the atmosphere.

Also new on Nimbus-3 was an Interrogation Recording and Locations System (IRLS) that could contact and receive data from remote platforms set up on balloons, aircraft, buoys and ships at sea, a Monitor of Ultraviolet Solar Energy (MUSE) experiment, and an Image Dissector Camera (IDC) which provided daytime TV pictures of cloudcover. The satellite was turned off on January 22, 1972.

Nimbus-4, launched on April 8, 1970, set a new record with nine experiments, six of which are still providing data. The satellite carried three new sensors—a Backscatter Ultraviolet Spectr
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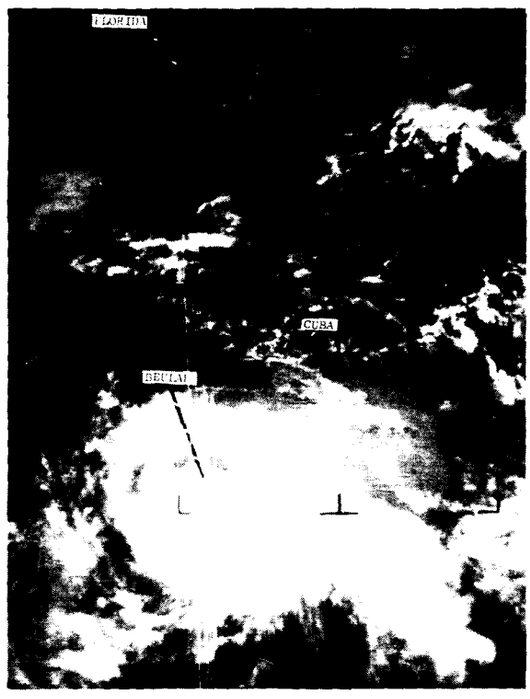
NIMBUS-1. The Advanced Vidicon Camera Subsystem aboard Goddard's first Nimbus satellite took this picture of the Mid Atlantic States on September 6, 1964. The area shown extends from the Outer Banks to Cape May.



NIMBUS-2. An Automatic Picture Transmission ground station recorded this view on September 14, 1967. Shown are Florida, Cuba and Hurricane Beulah.

NIMBUS-3. This striking dayti
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FROM PAGE 3

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d cloud tops; and pro-
l atmospheric moisture

The Nimbus Project is managed at the Goddard Space Flight Center. Stanley Weiland is Project Manager and Dr. William Nordberg is Project Scientist.

Prime Nimbus contractor is the Space Systems Organization of the General Electric Company in Valley Forge, Pennsylvania.

Two more spacecraft are scheduled for the Nimbus Project—Nimbus-F, to be launched sometime in 1974, and Nimbus-G, to be launched later in the decade.

Handling Nimbus Data

What makes Nimbus go? "People," says Ralph Shapiro, the Nimbus Operations Manger who has been flying the "butterfly" shaped observatory from the basement of Building 3 since August 28, 1964 when Nimbus-1 won her "wings."

"Many of the same people who were on the Nimbus-1 team are still around," says Shapiro. "These guys are hard working dedicated people who treat the spacecraft with tender loving care."

Since 1963, individuals with different skills, working for several companies, have joined together to form one effective team. Veterans of the program from Nimbus-1 days who are supporting the program are shown in the photograph on Page Six.

(Next Page)

THE CREW WHO STARTED IT ALL. Some Nimbus people who have worked on the project since the early days are (from left) Dr. William Nordberg, Project Scientist; Stanley Weiland, the present Nimbus Project Manager, was Integration Manager for Nimbus-1; Harry Press, Associate Director of Earth Observation Satellites, was Project Manager for most of the early Nimbus satellites; and Moe Schneebaum, Systems Division Chief, was the Spacecraft Systems Manager who developed most of the Nimbus flight hardware. Not shown are William Stroud and Dr. Rudolph Stampfl who were instrumental in starting the Nimbus program on its way. Mr. Stroud is currently Chief of the Advanced Plans Staff, and Dr. Stampfl is now TIROS-N Project Manager.

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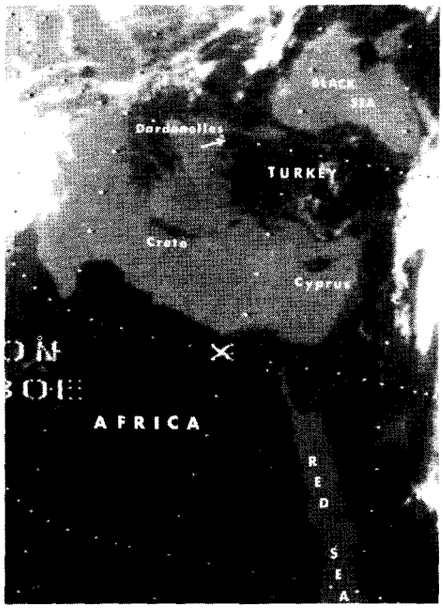
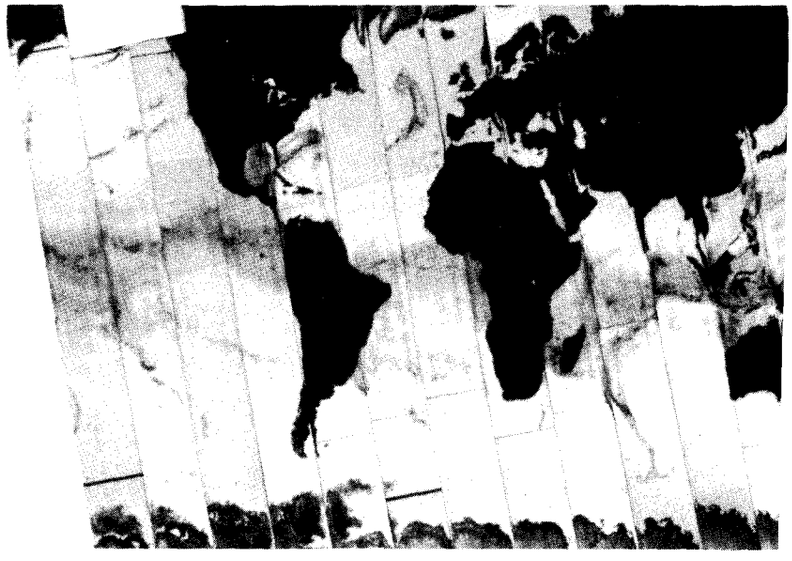


NIMBUS-4. This image was recorded by the Temperature Humidity Infrared Radiometer aboard the satellite in daylight on April 29, 1970. Note that land masses appear black, water gray, and cloud cover white.



NIMBUS-5. This image from the Electrically Scanning Microwave Radiometer taken on January 11, 1973 shows differences between snow and ice in polar regions and between rain and clear areas over oceans. In both polar regions, new ice and show appear darker than older ice and snow. Intense rain areas over oceans appear dark. Intermediate shades of gray indicate moderate rainfall. Rain is evident in several weather fronts and in the tropics.

NIMBUS DATA...From Page 5

Nimbus operations have been the breeding ground for many key people in other spacecraft flight operations at Goddard.

Ingenuity and determination has enabled the Nimbus Project to make use of the same data processing and display equipment over a ten year span with more mileage anticipated in support of the next two satellites in the Nimbus Program. To match the longevity of the equipment is the team that supports the program.

Although the program is an R&D effort, the ground system has developed into an operational system, the only one at GSFC. Data comes in from the acquisition sites, is processed and disseminated within 24 hours in the form of photographs, and digital tapes, or transmitted over data lines to world users.

The Nimbus center has been located in the basement of Building 3 since its inception. Major elements include the Meteorological Data Handling Center (MDHC), the Nimbus Control Center (NCC) and the Data Utilization Center (NDUC). Recently the TIROS Control Center was merged with Nimbus for more economical manpower utilization.

In spite of the age of the equipment, the output of the system increases in complexity and quantity.

NIMBUS OPERATIONS VETERAN TEAM MEMBERS are (from left) Richard Ormsby, Manager of the Nimbus Technical Control Center; Anthony Rossi; Ralph Shapiro, Nimbus Operations Manager; John Lindstrom, Manager of the Nimbus Data Utilization Center, and Lloyd Green.

GATHERED IN THE DATA UTILIZATION CENTER are veterans (from left) John Sissala of Allied Research Associates (ARA), Inc.; Chester Eddington and Edward Foote, both of the General Electric Company. Not shown is Walter Ahlin of ARA.

M&DOD and ND TEAM FOR NIMBUS. Members supporting the program since Nimbus-1 are (from left) George Harris, Christos Maskaleris, Frank McCluer, Dale Fahnestock, Earl Quirey, Lorenzo Covington, Harley Mann, and Eugene Humphrey.

RCA TEAM MEMBER VETERANS for the Nimbus Data Handling System are (from left) William Powell, Daniel Wilson, Raymond Carter, Roman Balon, and Frank Douglas.

GENERAL ELECTRIC PERSONNEL who have helped keep the Nimbus Technical Control Center running since Nimbus-1 are (from left) J. McNaney, S. Owen, W. Pugsley, E. Clark, R. Stephenson, and B. Palmer, Manager.

OAO-2 Shut Down After 4 Years

NASA's Orbiting Astronomical Observatory-2 (OAO-2) was shut down on February 13 during 22,000th orbit of Earth, ending one of the most productive careers in the history of space science satellites.

Designed to operate for one year, OAO-2 far exceeded the fondest hopes of project officials by operating more than four years. During its long lifetime the observatory made pioneering contributions to the space age scientific field of ultraviolet astronomy.

The shutdown followed failure of the high voltage system of the University of Wisconsin experimnet on board the spacecraft that left it unable to continue to acquire useful scientific data. Attempts to reactivate the experiment by ground command from the OAO Control Center here at Goddard were unsuccessful.

Launched on December 7, 1968, from the Kennedy Space Center, Florida, the 1,980-kilogram (4,400-pound) observatory carried two scientific experiments provided by the University of Wisconsin and the Smithsonian Astrophysical Observatory.

The Wisconsinn experiment, with Professor Arthur D. Code as Principal Investigator, viewed 1,930 celestial objects during 14,060 observations. The Smithsonian experiment, directed by Dr. Fred L. Whipple, completed its mission on January 7, 1972, after making more than 8,500 observations. A catalog of objects observed will be published by the Smithsonian Astrophysical Observatory this spring.

OAO-2's major scientific achievements include:

- Finding the intensity of radiation in extragalactic nebulae increased in the far ultraviolet portion of the electromagnetic spectrum due to the presence of hot stars;
- Detection of a huge hydrogen cloud a million miles in diameter around comet Tago-Sato- Kosaka—the first observational evidence that such clouds exist;
- Discovery that nagnesium emissions occur in cool giant and supergiant stars;
- Observations that may settle the enigma concerning a group of stars notable for apparently anomalous elemental abundances and for their enormous magnetic fields—more than 10,000 times stronger than that of the Sun;
- Observations of the Nova Serpentis in 1970 that changed traditional theories on the mechanisms of these unique phenomena;
- First ultraviolet observations above the atmosphere of a supernova discovered last year in the small galaxy NGC 5253—the brightest supernova in the past 35 years;
- First observation of ultraviolet emissions from the planet Uranus.
- New insights into the structure and composition of Earth's upper atmosphere.

OAO-2 was also an impressive engineering success, creating, in effect, its own technology where none existed before. It proved that meaningful space astronomical observations could be conducted over long periods of time by automated unmanned spacecraft in practically all regions of the electromagnetic spectrum.

During its long lifetime the space environment did not in any way degrade the OAO-2 telescopes—unlike Earth-bound telescopes which suffer degradation due to environmental pollution and the effects of gravity.

Earth Resources Symposium

Approximately 700 scientists from the United States and several foreign countries attended an Earth Resources Symposium held by NASA on March 5 through 9 at the Sheraton Inn in New Carrollton, Maryland.

More than 100 papaers were presented covering the results to date from Goddard's Earth Resources Technology Satellite (ERTS-1). Scientific disciplines that were discussed included agriculture/forestry/range resources; environment; mineral and land resources; and mapping and charting.

New Name for MSC

President Richard Nixon has signed into law Senate Joint Resolution 37, 93rd Congress, First Session, which designated the NASA Manned Spacecraft Center in Houston, as the "Lyndon B. Johnson Space Center" in honor of the late President.

Upon signing Public Law 73-8 President Nixon issued the following statement:

"It is with great pleasure today that I sign into law Senate Joint Resolution 37 designating the Manned Spacecraft Center in Houston as the Lyndon B. Johnson Space Center.

"Few men in our time have better understood the value of space exploration than Lyndon Johnson.

"It was he as Senator who wrote, introduced and helped enact the legislation which created the National Aeronautics and Space Administration. He called it the proudest legislative achievement of his years in the Congress.

"As Vice President he was Chairman of the National Aeronautics and Space Council in the critical early years of exploration when the groundwork was laid and the determination was made to put man on the Moon. Finally, as President he oversaw the first flights of the Apollo Moon landing program, and he did it in a way that led people beyond the adventure and the pride to the deeper meaning and the deeper benefits of space exploration. Speaking at the Manned Spacecraft Center in Houston on March 1, 1968 he summed up this national purpose in outer space:

" 'We do not build rockets and spacecraft to fly our flag in space, or to plant our banner on the surface of the Moon. Instead, we work and we build and we create to give all mankind its last great heritage. We are truly reaching for the stars.'

"By his vision, his work and his support Lyndon Johnson drew America up closer to the stars and before he died he saw us reach the Moon, the first great plateau along the way."

Suffrin' Sam Is at It Again

By David G. Lewoc
Assistant Chief
Plant Operations and Maintenance Division

"Sufferin' Sam," the Conservation Man, is touring again. He's visiting division staff meetings to update each division on the Conservation Program. This time he is being assisted by his long-time buddy and well-known-man-about-the Center, Hap Haszard.

The reason for this tour is that our utility costs are rising while the usage is decreasing. The crunch is on because the down is not equaling the up and our costs for the first half of this fiscal year have risen over the first half of the last fiscal year.

When Hap and Sam come to visit you, they'll talk about turning off power-consuming equipment, water-using equipment, and lights. They'll be appealing to you to turn your thermostats down in the winter and up in the summer and to keep your blinds closed in the summer.

Our single largest utility bill is for electricity. To stifle the rising cost of electricity, we are making frontal attacks on the usage of this utility, one of which is by requesting Goddard personnel to turn off their lights when they leave their offices/labs for more than an hour. We realize that turning off the lights in one room for an hour is about equivalent to a gnat on an elephant's ear, but when there are a million gnats on it, you can't see his ear at all. The average room contains ten fluorescent fixtures which consume only one kilowatt of power per hour at a cost of 1.5¢. But the point is that a million one-and-a-half cents is equivalent to $15,000. Turning off his office lights is the only way the average office worker can help the Conservation Program, and help of the magnitude of $15,000 is drastically needed.

Emergency Team Aids Cousteau

An emergency team from three federal agencies has helped ocean explorer Jacques Cousteau's damaged research vessel, Calypso, navigate the dangerous Drake Passage between Antarctica and South America. The team was disbanded when the Calypso arrived safely at Ushuaia, Argentina on February 21.

NASA, the National Oceanic and Atmospheric Administration (NOAA) and the Navy's Fleet Weather Service (FWS) transmitted weather, sea ice and iceberg information to the 141-foot ship via NASA's third Applications Technology Satellite (ATS-3) in synchronous orbit over Brazil at the equator. The Calypso carries satellite communications and weather receiving equipment set up last fall for experimental communications and oceanographic research by Dave Nace and Locke Stuart of Goddard (See *Goddard News*, February 1973).

On January 16, the Calypso's port propeller was damaged. Later on February 9, the port propeller was again damaged and the starboard propeller slightly damaged by what Cousteau described as a "huge ice block" that smashed into the rear of the ship as he was anchored in Hope Bay near King George Island off the Antarctic peninsula. The port propeller was repaired at sea, but the shaft finally broke on February 12, making it completely inoperable. The ordinary speed of the vessel is about 15 knots. It was then reduced to about 5 knots.

To help the ship make it across the 800 kilometer Drake Passage, Goddard, Ames, NOAA and FWS provided Costeau with the very best information the combined team could give. Costeau had to analyze the information carefully to choose the time to make the run. Under even the best conditions the ocean there is rough with waves ususally about 15 feet and up to 50 feet in bad weather. It took the Calypso over four days to navigate the passage under exceptionally fine weather conditions.

Goddard's first Earth Resources Technology Satellite (ERTS-1) was turned on to view the cloud-free areas of the Calypso's route on February 16 for iceberg location information. ERTS-1 is not usuallly programmed to take pictures in the Antarctic region.

The ERTS picture was processed at Goddard and turned over to the FWS, analyzed and the information transmitted to Cousteau. FWS identified the heading of scattered icebergs along the ship's route as well as a concentration of icebergs about 15 nautical miles long and wide, along the Calypso's path. The Navy ice experts said where there are icebergs there are nearby, in 99 per cent of the cases, smaller pieces which they termed "growlers" and "bergy bits," small but dangerous chunks of ice. FWS could also ascertain there was no pack-ice in the vicinity.

"The imagination, courage and hard work of Small Businessmen have, since our Country's founding, been a great source of national vitality and inventiveness."

Richard Nixon

Goddard Mourns. . .

Norman C. Schaller, an Aerospace Engineer with the Structural Dynamics Branch of the Test and Evaluation Division for 12 years, suffered a stroke on February 24, 1973 and passed away on February 26. Mr. Schaller joined Goddard in 1959 during the infancy of the agency. From 1959 until 1964, he was Head of the Mechanical Test Section. From 1964 until his retirement from government service in May 1971, he was a Staff Engineer to the Branch Head of the Structural Dynamics Branch.

He worked on most of NASA's unmanned spacecraft and was an expert in mass measurements, mechanical design, small mechanisms and orbital deployment mechanics. His versatility in engineering work at GSFC included: weight and balance studies, stress analysis, structural design, tool design, dynamic analysis, and systems design. He was very inventive and was just recently issued a patent on a complex multi-axis vibration suspension system for Launch Phase Simulator Facility, an advanced combined environmental test facility.

Prior to joining NASA, Mr. Schaller was an Aeronautical Research Engineer responsible for structural design on the Vanguard Project at the Naval Research Laboratory and was one of the men responsible for solving the early difficulties and bringing the U.S. space race its early successes.

Mr. Schaller was a native of Philadelphia, Pa. and was a graduate of the Drexel Institute of Technology in Philadelphia. He was an avid sailing enthusiast and was a commodore of the Washington Cup Regatta. He was also extremely interested in photography.

Mr. Schaller was married and had two grown daughters and one grandchild.

Press Association Members at Goddard

About 100 members of the Maryland-Delaware-D.C. Press Association were guests at Goddard during the morning of March 2 for a discussion of tracking, ERTS and other Goddard operations.

The morning was part of the association's 64th annual meeting that began March 1 and ended at noon March 4. Goddard's Public Affairs Office was host for the affair here.

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