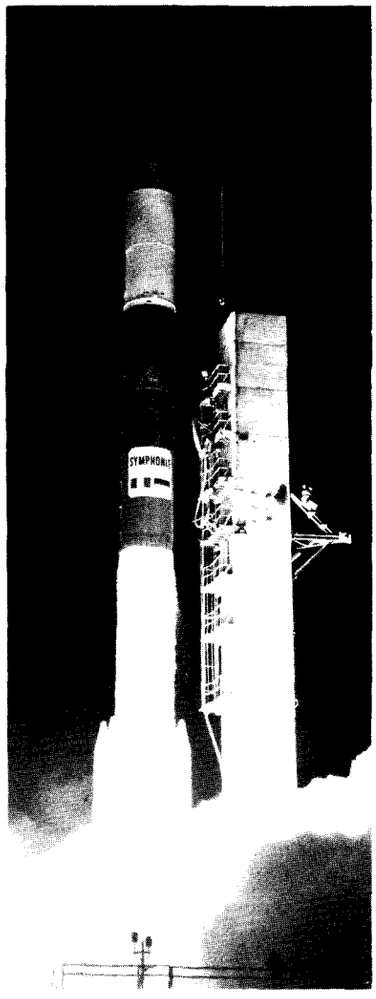
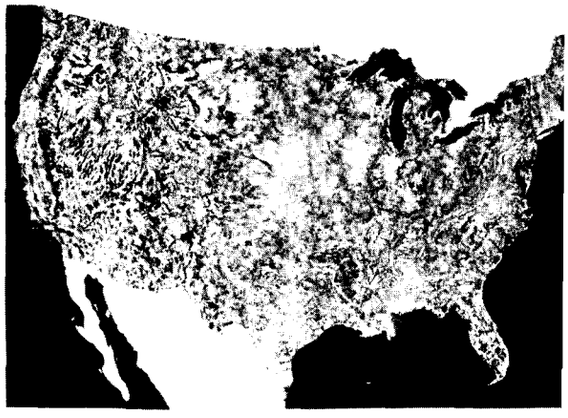
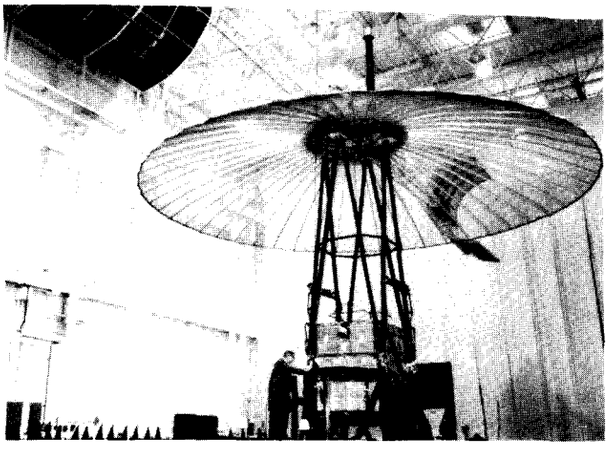
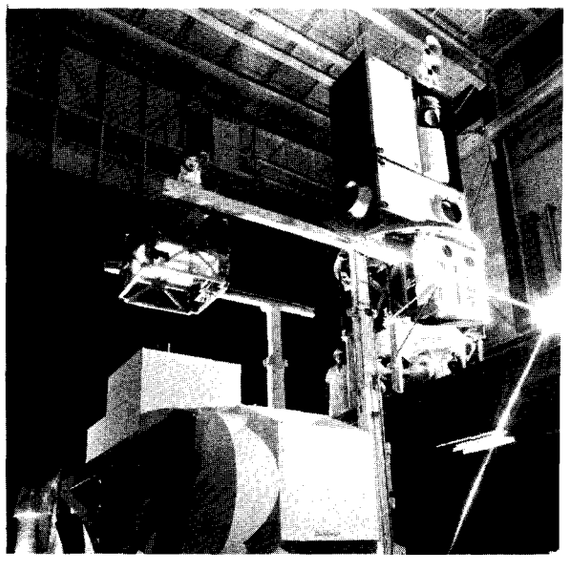
GODDARD NEWS
January 1975 Vol. 22, No. 10









1974 IN REVIEW. For NASA, the past year was highlighted by the longest mission ever attempted by man, journeys to Venus, Mercury, and Jupiter, and planning for the Space Shuttle era. Above left is a cloud cover picture of the Western Hemisphere taken from the first Synchronous Meteorological Satellite, SMS-1, which was launched last May. The last Applications Technology Satellite, ATS-6, (lower left) is now being used to test a variety of new space communications concepts after its launch from a Titan III-C on May 30. A Delta launched a French-German communications spacecraft, Symphonie, (center) into synchronous orbit over the Atlantic on December 17, the last launch of the year. The Earth Resources Technology Satellite continued to return electronic data of the Earth's surface, such as the images used in the mosaic shown above right, throughout 1974. Also, Goddard engineers unveiled a Low Cost Module Spacecraft (lower right), a bus-type payload which can accommodate many types of future missions.

1974 in Review

The longest space mission ever attempted by man and missions to three different planets—Venus, Mercury and Jupiter—were among the highlights of NASA's 1974. For Goddard 1974 was the year the Center continued with its own projects, supported commercial and foreign missions, and broke into new areas of spacecraft technology aimed at the shuttle era.

Manned Space Flight

As the new year opened, Skylab IV astronauts Carr, Gibson and Pogue became the first men to begin a new year in space. On February 8, the astronauts splashed down into the Pacific successfully completing the longest space mission ever attempted by man—84 days, 1 hour and 16 minutes.

1974 was also a year of planning for the Apollo Soyuz Test Project (ASTP). This joint United States-Russian project to test the design of an international compatible docking system in space using an Apollo and a Soyuz spacecraft continues on schedule for a July 1975 launch.

(See Page 5)

Dr. Clark Lays Out New Directions for Goddard

During the annual awards ceremony on December 10 (See article on Pages 6 and 7), Dr. John F. Clark, Goddard Director, spoke on the new level of "economic competence" Goddard will have to achieve if the Center is to maintain its present level of performance in the light of future budget restrictions. The following is excerpted from Dr. Clark's speech and touches on what Goddard is doing and will be doing about the problem:

The prime reality of today is that we have fewer dollars and because of inflation each dollar is but a skeleton of its past value. I said we should deal with that reality. I mean it. In the coming months you will see a growing emphasis on our economic performance. In our technological and scientific performance we have been judged and found proficient. But Goddard is going to be weighed on an additional scale from now on, the scale of *economic competence.*

(See Page 2)

DR. CLARK . . . . From Page 1

Improvements in cost performance require changes that must permeate the organization. As we bring cost considerations to the level of our emphasis on technical excellence, the very atmosphere in which we do business must change. This means, of course, that we must revise practices and emphasis, but above all we must revise attitudes and philosophic outlook.

First of all, we will strive to increase dollar savings without compromising or jeopardizing mission objectives. In several areas the potential for further savings is especially promising: spacecraft; sensors and instruments; component/standardization and quality buys; integration, test and flight operations commonality; testing; payload adaption to the Spacelab; and administrative processes.

To reduce costs in these areas we must vigorously pursue past and present efforts and seek new approaches. The Center will continue to promote standardization and commonality, as well as the broad use of proven flight hardware. We will further encourage the development and use of common systems, as we are in the case of attitude determination systems and standard tape recorders. We will continually advocate hardware that is simple in design and built only to the complexity level required. The "sophistication of simplicity" is a powerful approach to improved reliability, equal or better performance, and sharply reduced costs.

In the area of sensors and instruments, it is imperative that their development be done by or in close cooperation with those who conceptualize the idea, and that these conceptualizers remain fully involved with and committed to that device through its flight operations. We also recognize that new instrument concepts must be developed as a part of SRT, not project activities.

In determining requirements for reliability and quality assurance we will be flexible. We will not impose additional NASA requirements where existing contractor R&QA practices are adequate, and are already included in the bill. For example, we will further reduce testing costs by selective use of system and subsystem level testing instead of all testing at the "black box" level. We have, for a number of years, been in the forefront in using a "proto*flight*" approach to testing, thus eliminating proto*type* and destructive test model requirements.

It is essential that we develop a standard low-cost modular spacecraft. This will allow us to accomplish more projects within our budget limits. Many of our new missions will be of the modular design. Benefits will include flexibility for multi-discipline missions plus utilization of the Shuttle's capability for in-orbit servicing and for retrieval. We are working along these lines with the Low-Cost Modular Spacecraft. And for the smaller, highly specialized missions we will use a common carrier such as the AEM.

For the larger missions the practice of independent spacecraft development has become too expensive. Creation of a common modular spacecraft has the potential for a 40% savings in this area alone. The amount involved is as much as $250M in reduced costs in the next ten years. The missions considered include EOS, SOSS, EGRET, SMM, HEAO-2, and SEASAT-B. Additional savings will result because the Shuttle's ability to replace malfunctioning equipment will allow us to significantly reduce the number of spacecraft built for a given program.

We will strive for standardization at the highest practical level because that should achieve maximum cost savings. When we are unable to use a standard spacecraft, for instance, we will do the next best thing and use standard or existing subsystems, or black boxes, or modules. As an example, Goddard has employed the same basic Unified S-Band transponder for AE, for ERTS, and for GEOS-C.

An additional important factor in cutting costs is the ability to make quantity buys. This not only reaps the advantage of lower prices because of quantity production, but, if applied properly, can greatly reduce lead-time. We are presently buying COSMOS solid state parts at a savings of 30 per cent over small lot buys, and we plan to expand such purchasing in other profitable areas as funding permits.

DR. JOHN F. CLARK, Goddard Director, talks on the future of Goddard programs during the 1974 annual awards ceremony on December 10.

We have developed and effectively used the concept of multi-satellite control centers, for the variety of cost reductions they make possible. Our experience includes Nimbus with ITOS, AE with OSO, and the 16 projects currently being supported by MSSOCC, the Multi-Satellite Operations Control Center.

We will continue the practice of eliminating redundant hardware and software systems for the integration and testing of spacecraft. In one example, centralized systems were devised for the OAO, S^3, SAS, and AE programs, involving the use of a common computer.

In all of our efforts to reduce expenses we must apply ingenuity. But it doesn't have to be your *own* ingenuity. If you see something that works somewhere else, consider using it yourself. As an example, I give you the Delta launch vehicle. It is a marvelously successful mixture of ideas, systems, and equipment from scores of sources, in and out of NASA.

Delta also sets an example for us from another viewpoint. Its restructuring will insure an even higher probability of success for the more expensive payloads coming its way. Delta must now be considered as NASA's first truly *operational* vehicle system. It's impressive and challenging to realize that Delta will fly on the average of at least once a month for at least the next four years. I regard Delta as a standard, cost-effective space system at its best.

And that gets us back to the question of costs. Can this agency and can this center achieve meaningful cost effectiveness in its activities?My view is that if Goddard can't show the way, nobody can. It's almost as if we were designed for it. We have more reimbursable launches; more operational systems; more reusable systems; more standardized systems; and more diversified systems than any other center. Furthermore, our sounding rocket activities are really low cost re-usable sortie operations which have provided a bank of experience to tap as Shuttle sortie planning develops.

With such a base, Goddard is truly well equipped to lead in the growing emphasis on cost performance. We will do our usual competent technical job, but we will do it more efficiently. We are going to do these jobs on schedule, do them within the budget, and do them to realistic initial cost estimates.

IN THIS ISSUE

- 1974 in Review
- Dr. Clark's Speech
- Dr. Low Award
- Dr. Chapman Honored
- Spacemobile
- Employee Awards
- Ski Club
- Paul Garber
- Retirees
- Dr. Clark in Ecuador
- NASA Launches
- Gladys Spellman

Dr. Low Receives Public Service Award

PRESIDENT FORD (right) presents one of five Rockefeller Public Service Awards to Dr. George M. Low (center), Deputy Administrator of NASA, for his excellence in administration. Left is Dr. William G. Bowen, President of Princeton University. Since 1952, Princeton's Woodrow Wilson School of Public and International Affairs has administered the award annually as a public trust.

George M. Low, Deputy Administrator of NASA, received one of five Rockefeller Public Service Awards for 1974. United States President Gerald Ford made the presentation in a luncheon ceremony on December 4 at the Mayflower Hotel in Washington, D.C.

The $10,000 tax-free awards are administered as a public trust by the Woodrow Wilson School of Public and International Affairs at Princeton University.

John D. Rockefeller III established the awards in 1952, with the cash stipends added in 1960, to honor excellence in the career civil service. The awards were set up to counter the mistrust in government spawned during the McCarthy era. Today, the President said, they still honor "the vast and loyal group of people doing good work for their country."

Dr. Low received his award for excellence in administration. He was cited for his contributions to the success of the Mercury and Gemini programs, the first Apollo moon landing, as well as for his negotiations with the Russians which resulted in agreement on the joint Apollo-Soyuz space flight scheduled for this year. The son of an Austrian farmer, Dr. Low migrated to this country with his mother when he was 14.

Other recipients and the categories in which they won are: James Bruce Cardwell, head of the United States Social Security Administration, for human resources development and protection; George Jaszi, Director of the Bureau of Economic Analysis of the Department of Commerce, for professional accomplishment; Robert M. White, Administrator of the National Oceanic and Atmospheric Administration, for the development and protection of physical resources; and Maurice J. Williams, chairman of the Development Assistance Committee of the Organization for Economic Cooperation and Development, for intergovernmental operations.

Dr. Chapman Honored for Kohoutek Pamphlet

DR. ROBERT D. CHAPMAN (right), Head of the Computations Section in Goddard's Laboratory for Solar Physics, receives the 1974 American Institute of Physics-United States Steel Foundation Science Writers Award from Dr. H. William Koch. The award consisted of $1500, a citation and a Moebius strip.

Dr. Robert D. Chapman is the 1974 winner of the American Institute of Physics—United States Steel Foundation Science Writing Award in Physics and Astronomy. Dr. Chapman, Head of Goddard's Computation Section, received the award for his pamphlet "Comet Kohoutek," Published by the Goddard Educational Programs Branch.

He is the sixth scientist to be named winner of this prize which is offered for "noteworthy writing about physics and astronomy in the media of mass communications."

The award was presented by Dr. H. William Koch at the annual meeting of the Corporate Associates in Washington, D.C., this November. At the same meeting, Dr. Michael J. Vaccaro, Goddard Associate Deputy Director for Management, received an award in behalf of the Goddard Center.

Goddard's Educational Programs Branch in the Office of Public Affairs which coordinated publication of "Comet Kohoutek – A Teacher's Guide with Student Activities" distributed 50,000 copies to leading educators throughout the country. Many school systems and state departments duplicated the document for broader distribution to teachers and students in their responsibility areas.

Elva Bailey, Goddard's Educational Programs Officer, reports having received dozens of unsolicited commendations from educators across the country which he indicated is rare for any government publication. The author, Dr. Chapman, also received many letters commending the educational value of the document.

The following excerpt from a letter written by the science supervisor of the State of Virginia is typical:

> "Through your splendid cooperation, every student of Earth and Space Science in the Virginia public schools will have an opportunity to study the Comet Kohoutek using materials developed by NASA. This excellent material will assist us to continue to improve our science program."

Dr. Chapman was born in Erie, Pennsylvania; received his B.S. in physics from Pennsylvania State University in 1959, and his Ph.D. in astronomy from Harvard University in 1964. From 1964 to 1967, he was assistant professor of astronomy at the University of California at Los Angeles.

From 1967 to the present time, Dr. Chapman has been at Goddard. In addition, since 1970, he has been a lecturer in astronomy at the University of Maryland in College Park.

Making Space Science Come Alive

Do you have an innovative demonstration idea which could be used in the NASA Spacemobile Space Science Lecture Demonstration? New demonstration ideas are needed to assist NASA representatives as they explain science concepts and NASA projects in school assembly programs across the country.

The current school assembly program describes to the school audience past, present and future NASA programs. The lecturer makes use of demonstration devices, such as spacecraft models, satellite and rocket models, photographs, manned and unmanned spacecraft hardware, solar cells, and a telemetry simulator. This telemetry simulator which was developed at the Goddard Space Flight Center for the national program has been a highlight of the lecture demonstration for the past several years. It is hoped that the current contest will produce another demonstration idea comparable to the telemetry simulator.

NASA employees participating in this program should submit their ideas through their field center Educational Programs Branch in the Office of Public Affairs. One demonstration will be selected for inclusion in the Spacemobile lecture-demonstration program by a panel of judges during June of this year. A special non-monetary award will be presented to the originator of the winning idea.

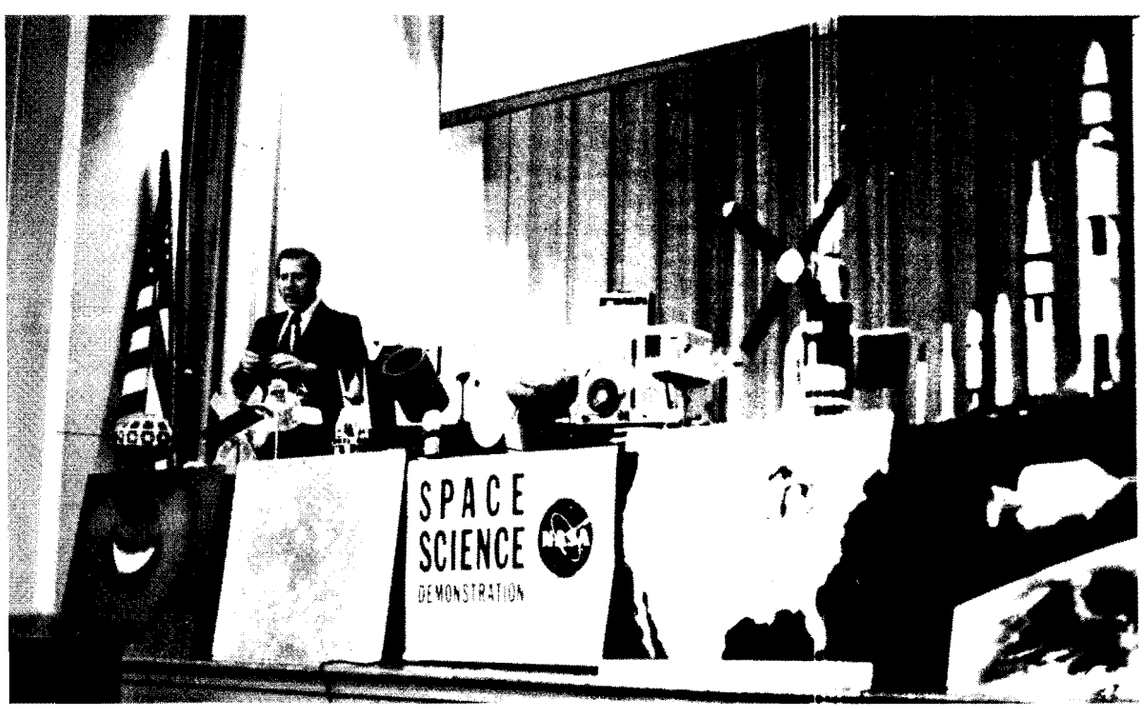
The cost of development of a prototype demonstration will be borne by each field center participating in the program. NASA Headquarters Educational Programs Division will fund production of the winning demonstration device. Twenty-five devices will be produced.

The NASA Space Science Education Project (Spacemobile) is in its 15th year of bringing space programs to U.S. schools.

During Fiscal Year 1974, the SSEP was staffed by specialists with operating spacemobile units who provided 7,767 lecture-demonstrations, classroom and aerospace education programs, to an audience of 1,290,790 and appeared on 190 ETV, commercial TV and radio programs with an estimated audience of 10,493,946. Since 1969 the program has been operated for NASA by the Oklahoma State Education and Research Foundation of Oklahoma State University, Stillwater, Oklahoma.

Each NASA field center coordinates the activities of an assigned number of specialists and spacemobile units. Goddard's Educational Programs Branch is responsible for five units for schools in the 12 northeastern states.

Hopefully, the new demonstration will be selected from Goddard entries. If you would like more information please contact Elva Bailey or Jack Bannister on extension 2205 in the Educational Programs Branch, Office of Public Affairs, Room 150, Building 8.



1974 REVIEW . . . . From Page 1

In 1974, great strides were made in the development of the future reusable Space Transportation System. The system, consisting of a Space Shuttle, Spacelab and Space Tug, is being developed as an economical and effective way of going into space in the 1980's and beyond.

Looking to the future in the Space Shuttle era, Goddard engineers unveiled a Low Cost Module Spacecraft (LCMS). Designed as a candidate Shuttle payload, the LCMS cost about $250,000 (as compared to the millions for current spacecraft) and was built by small local firms. The LCMS is a bus-type payload which can accommodate many different types of missions. Its design incorporates modules for various types of instruments and experiments, each of which can be replaced by the Shuttle instead of replacing or repairing the entire spacecraft.

Space Applications

1974 saw the use of the first U.S. domestic commercial communications satellite with the launch, on a Goddard Delta rocket, of Western Union's WESTAR-A. The drum-shaped, 1265-pound satellite was launched on April 13. The second WESTAR was launched on October 10.

May saw the launch of the first Synchronous Meteorological Satellite (SMS-1). Goddard's cylindrical, 1379-pound satellite was carried to its synchronous orbit position over the Atlantic by a Delta. Since launch, SMS-1 has been successfully transmitting every half-hour the first day and night cloud cover pictures of the entire Western Hemisphere from its 22,300 mile stationary position over the equator. It also receives and transmits environmental information from unmanned data collection platforms in remote areas and monitors solar flar activity. SMS-1 is the first of a number of satellites which will be spaced around the equator in the late 1970's to provide world-wide weather data.

May also saw the launch of another Goddard pioneering spacecraft, ATS-6, the last of the Applications Technology Satellite series. The most powerful, complex and versatile communications satellite ever developed, ATS-6 was placed in a synchronous orbit from Cape Canaveral on a Titan III-C rocket. The satellite is now being used to test a variety of new space communications concepts. These include broadcasts of health and education television programs to small, low-cost ground receiving units in such remote regions as Alaska, the Rocky Mountains and Appalachia. About one year after launch, ATS-6 will move over Africa for use by the Indian government in a year-long experiment to transmit educational programs to some 5,000 villages and cities in India. Program content is to be supplied by the Indian government.

The Earth Resources Technology Satellite (ERTS-1), launched in 1972, continued throughout the year to prove the validity of its basic concepts. Although its Return Beam Vidicon Camera and tape recorders are not working, its Multispectral Scanner is still returning electronic data of the Earth's surface in four spectral bands. This imagery is steadily achieving world-wide utility as a tool for agriculture, map-making, geology, forestry, land-use management, water management and many other Earth resources fields. Canada has been operating its own ERTS ground station since 1972, and the Brazilian station became operational in 1974. Italy is now building a station and Iran in October signed an agreement with the U.S. to build its own station. Similar agreements are pending with other nations.

Two Skynet communications spacecraft were launched on Deltas in 1974 for the British Ministry of Defence. The first one, in January, was unsuccessful due to a launch vehicle failure, but the second one, in November, was placed in an excellent orbit.

Then in December another Delta launched a French-German communications spacecraft, Symphonie, into synchronous orbit over the Atlantic.

AMERICAN AND SOVIET CREWS. The five crew members for the joint U.S.–U.S.S.R. Apollo-Soyuz Test Project (ASTP) this summer hold a model of the American Apollo and Russian Soyuz spacecraft in a docked configuration. They are (from left): Astronaut Thomas P. Stafford, commander of the American ASTP crew; Astronaut Vance D. Brand, command module pilot of the American ASTP crew; Astronaut Donald K. Slayton, docking module pilot of the American ASTP crew; Cosmonaut Aleksei A. Leonov, commander of the Soviet ASTP crew; and Valeri N. Kubasov, engineer of the Soviet ASTP.

Space Science

On the scientific side of the house, Goddard placed six spacecraft into orbit. San Marco C-2, a U.S./Italy cooperative mission to conduct air density measurements was launched into equatorial orbit by an Italian launch crew using a Scout rocket from the San Marco complex off the coast of Kenya. Later, in October, the same crew launched UK-5, a British spacecraft designed to look at galactic and extra-galactic X-ray sources. UK-4, a United Kingdom technology satellite with experiments related to power systems, attitude control and stabilization, was launched from the Western Test Range in March.

Two more international scientific spacecraft, AEROS-B, a German upper atmosphere-measuring satellite, and the first Netherlands satellite, ANS-A, were launched in 1974.

The United States continued its systematic exploration of the solar system in 1974, carrying out missions to three different planets—Venus, Mercury and Jupiter.

Pioneer 11, following up on the successful encounter of its predecessor, Pioneer 10, swept past Jupiter on December 3, at a distance of 43,000 kilometers, taking photographs and making measurements. The encounter was three times closer than Pioneer 10, and culminated a two-year billion-kilometer journey from Earth.

Meanwhile, Mariner 10, the spacecraft that refused to quit, headed for a third encounter with Mercury after twice looping around the Sun and flying by the planet in March and September 1974. The spacecraft provided man with his first closeup look at this tiny planet, closest to the Sun. Along the way, Mariner 10 made striking photographs and returned important data on Venus, providing new clues to the origin and evolution of that cloud-shrouded planet.

Near year's end, on December 10, scientists launched the first of two probes designed to fly closer to the Sun than any previous spacecraft. At times, Helios-A's subsystems will encounter temperatures hot enough to melt lead, 300 degrees C. Flying within 45 million kilometers, the German probe is designed to obtain new information on interplanetary space in the region close to the Sun.

(See 1974 Launches on Page 10)

Ski Club Busy When the Snow Flies

"Think Snow" is the motto of the Goddard Ski Club, and when the snow season arrives each year club members get busy with their favorite winter sport. Their most recent ski trip was to Killington/Pico, Vermont on December 27 through January 1 for their annual New Year celebration. "This Trip was a fantastic success and everyone made use of their skills on a variety of slopes," said trip leader Bill Curlen.

To prepare for the ski season, the club held a Dry-Land Ski School (DLSS) and pre-season party at the Goddard Recreation Center on December 12. The purpose of the Dry-Land Ski School, under the direction of Clint Carle, was to explain ski terminology, equipment, and provide basic instruction on a dry (without snow) surface to beginning skiers. The DLSS turned out to be a most successful event with about a dozen new skiers participating.

The second event of the evening, the pre-season party, was attended by around 100 people who joined together for a good time which included food and drinks, ski movies, dancing and sharing of memorable past ski trips and talk of future trips.

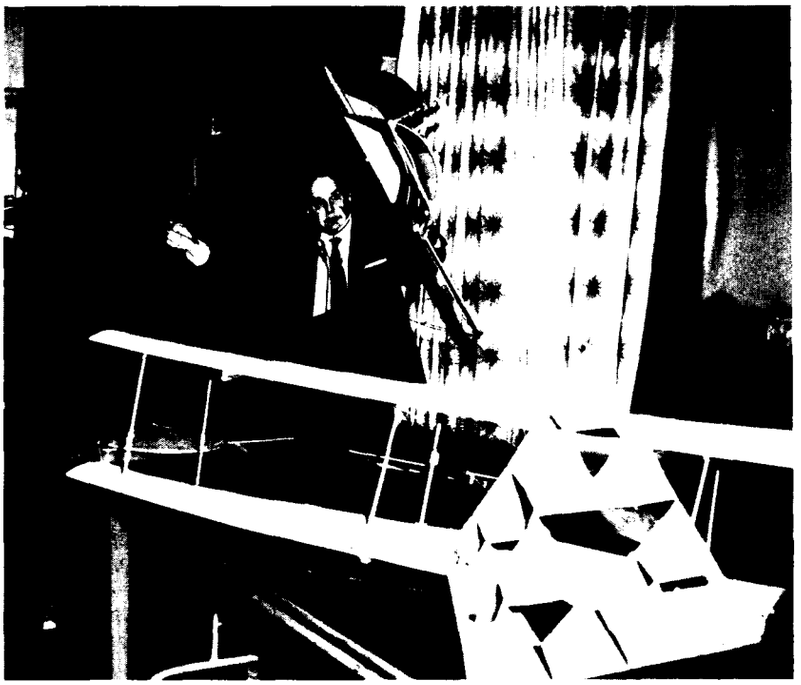
The Ski Club plans the following trips in the coming months: Elk Mountain, Pennsylvania, on January 24-26; Mt. Sutton, Canada, on February 8-16; and Aspen/Steamboat, Colorado, March 8-22.

If you have any questions about the club or the trips, call John Berbert on extension 5055.

The club is relatively small but very active with a membership of about 150 regular (GSFC) and associate (non-GSFC) members dedicated to good fellowship, good times, and good skiing. If you don't ski, you might keep them in mind because the club is active all year round with picnics, bike hikes, and raft trips among the events held in the warmer months.

SKI INSTRUCTOR Clint Carle demonstrates a basic traverse (turning) maneuver during the Ski Club's Dry-Land Ski School. Frank Dooley and Dennis Hewitt look on.

On Kites and Boomerangs



PAUL GARBER holds up one of Sir Cayley's kites, displaying camber and dihedral designs. In the foreground are tetrahedral kites designed by Alexander Graham Bell and a replica of a controllable kite built in 1899 by the Wright brothers.

By Dr. David Stern

The house was full on Monday, December 9, when Paul Garber, past curator of the Air and Space Museum of the Smithsonian, and Benjamin Ruhe presented an Engineering Colloquium on "Kites and Boomerangs." Things were no less crowded down below, where a display of about 10 colorful kites and dozens of boomerangs held the center of the stage.

The colloquium began with a short color film of a championship boomerang contest in Australia, showing boomerangs faithfully returning to the contestants. An outdoor demonstration by Mr. Ruhe was called off because of wind. The show ended two busy hours later with another film—a navy training film showing the use of a maneuverable gunnery target kite, invented by Mr. Garber during his navy service in World War II. Holding up one of the few remaining target kites left out of 400,000 manufactured, Garber said he may owe his life to the invention—while he was ashore arranging for the kites to be produced, his ship was sunk.

Meanwhile, the audience was treated to the lore of boomerangs and to the history of kites, which in many ways were the ancestors of airplanes. The guests heard about the aerodynamic research kites of Sir George Cayley, the elaborate box kites of the Australian, Hargrave, the original hang-gliders of Lilienthan and Chanute, man-carrying ship-towed kites of Alexander Graham Bell and meteorological kites which rose five miles and had to be hauled down by a steam engine.

Sorry if you missed it. And maybe the last word belongs to *Aviation Week and Space Technology* which facetiously noted one week later: "Economic problems faced by NASA are forcing the agency to reorient programs and schedules and to examine what its future potential can be. Goddard Space Flight Center has apparently gotten the hidden message on things to come. *The center last week sponsored an engineering meeting on kites and boomerangs.*"

Recent Retirees

Best wishes to the Goddard employees who have retired during the past six months. Listed by directorate, they are:

Office of the Director (GISS)

Evelyn Kenner

Administration and Management

Charles Anderson
Robert Appleby
Murray Arnold
John T. Atkins
Frederick Charles
Virginia Deener
Joseph Fitzpatrick
William B. Green
Arthur Haszard
Douglas Hoover
John A. Klisch
Gertrude Law
Louis Marcotte
Melvin Monroe
Yvette Partington
Williard C. Passo
Ruth Pera
Louis Robinson
Ben H. Simmons
Mary F. Tayman
Ronda Triplett
Evelyn Vaughan
Gerald H. Wolfe
John V. Viynos

Systems Reliability

Russel Dorrell
William E. Hudson
Herman La Gow
Margaret Lau
Robert C. Prince

Projects

William Johnson
Arthur L. Sprott
Stanley Weiland

Mission and Data Operations

C. Snowdon Conkey
David J. Stewart

Sciences

Jay Dyson
Benjamin Schlachman
Elio V. Serra

Engineering

Harry M. Bickford
Edward Caffo
Joseph Chisholm
Charles L. Davis
Arthur A. Default
Henry Ernst
Aaron Fisher
Maurice Levinsohn
Robert Mattingly
Nathaniel Price
Eugene Stroup
Robert W. Stroup
Howard Zabriskie

Networks

Richard J. Augenstein
Daniel Bell
George W. Fariss
Evalynne Nightengale
Dallas Tuning

Applications

Wilber B. Huston
I. Clay Prillaman

GODDARD AROUND THE WORLD

Dr. Clark Visits Ecuador

STATION DIRECTOR CHET SHADDEAU (above, left) and Mrs. June Clark share a laugh as Goddard Director Dr. John F. Clark signs the guest register at the STDN Station in Quito, Ecuador during their visit in early December. While in Quito, Dr. Clark conferred with officials of the Ecuadorean cooperating agency, the Polytechnic Institute of Quito; ESCO, the Bendix subcontractor; the United States ambassador to Ecuador; and station management. Dr. Clark inspected the Quito station and was presented an ESCO pin by Adolfo Endara, Project Manager for NASA-Bendix activity in Quito, in ceremonies at the station's cafeteria. Señor Endara (below, left) introduced Dr. Clark to (from second left) Alberto Rivera, lead mechanic at Quito with 13 years service; Alfonso Alarcon, mechanic/driver, who with 17 years service is Quito's senior employee; and Rodrigo Nunez, transportation supervisor.

NASA Launches of 1974

*Skynet II-A	Jan. 18	Reimbursable launch. United Kingdom communications satellite. Delta launch vehicle failure.
Centaur Proof Flight	Feb. 11	Test flight of booster planned for Viking Mars launch in 1975. Engine failure. Titan III-E launched from ETR.
*San Marco	Feb. 18	U.S./Italy mission to measure air density. Scout launched from Italy's San Marco platform in Kenya.
*UK X-4	Mar. 8	Reimbursable launch. United Kingdom technology satellite. Scout launched from Western Test Range.
*Westar-A	April 13	Reimbursable launch. Western Union communications satellite. Delta launched from Eastern Test Range.
*SMS-I	May 17	First Synchronous Meteorological Satellite. Delta launched from ETR.
*ATS-6	May 30	Applications Technology Satellite designed to demonstrate a wide range of advanced applications including public communications experiments in the U.S. and India. Titan III-C launched from ETR.
Hawkeye	June 3	To study the topology of the magnetic field and the interaction of the solar winds with the geomagnetic field. Scout launched from WTR.
*AEROS-B	July 16	Spin-stabilized, Earth-orbiting German satellite launched on Scout from WTR.
*ANS-A	Aug. 30	Netherlands satellite to obtain data from celestial X-ray and UV sources. Scout launched from WTR.
*WESTAR-B	Oct. 10	Reimbursable launch. Western Union communications satellite. Delta launched from ETR.
*UK-5	Oct. 15	To investigate galactic and extra-galactic X-ray sources. Scout launched from SM.
*NOAA-4, INTASAT and OSCAR-7	Nov. 15	Improved TIROS Operational Satellite launched for National Oceanic and Atmospheric Administration. Piggyback payloads: Spain's INTASAT and radio amateur OSCAR-7. Delta launched from WTR
Intelsat IV F-8	Nov. 21	Part of global communication commercial satellite system. Launched for COMSAT on A-Centaur from ETR.
*Skynet II-B	Nov. 22	Reimbursable launch. United Kingdom communications satellite. Delta launched from ETR.
*Helios-A	Dec. 10	German satellite to investigate the properties of interplanetary space near the Sun. Titan III-E Centaur launched from ETR.
*Symphonie-A	Dec. 17	Reimbursable launch. French/German experimental communications satellite. Delta launched from ETR.

*Major Goddard involvement

GLADYS NOON SPELLMAN (second from left), United States Representative Elect, visited Goddard on Tuesday, December 17. After discussions with Goddard's Assistant Director Dr. Leslie H. Meredith and Director of Administration and Management Samuel W. Keller (third from left), Mrs. Spellman, Samuel W. Keller, Fred Starbuck, Associate Chief of the Test and Evaluation Division, and the rest of Mrs. Spellman's party toured some of the Goddard facilities, such as the launch phase simulator shown above. Nationally, Mrs. Spellman was elected President of the Association of Counties and has served on the Advisory Committee for Intergovernmental Relations, the National Labor-Management Relations Service, and the Steering Committee of the Urban Affairs Commission of the National Council of State Governments. Also, Maryland Governor Marvin Mandel has appointed Mrs. Spellman to serve on four of his committees, and she has been active in regional and local affairs. A local native, Mrs. Spellman attended George Washington University and took graduate courses at the Department of Agriculture. Formerly a teacher in the Prince Georges County Public School System, Mrs. Spellman lives with her husband, Reuben, who is a mechanical engineer, and their three children in Montpelier.

ice of Public Affairs at the Goddard Space Flight Center, Mail Code 202, National Aeronautics and Space Administration, Greenbelt, Maryland 20771. Deadline for contributions for the February issue is Monday, January 27.

Nancy Mengel, Editor
Patricia Ratkewicz, Secretary, Phone Extension 4141