GODDARD NEWS

GODDARD SPACE FLIGHT CENTER / GREENBELT, MARYLAND

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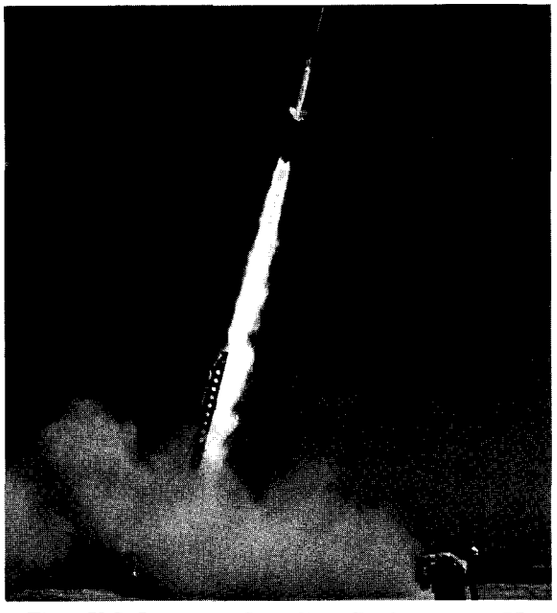
First International Satellite Successfully Launched

INTERNATIONAL COOPERATION IN ACTION . . . Mr. Robert Baumann, Goddard Project Manager and Dr. Harry J. Goett, GSFC Director, exchange congratulations with Sir Harrie Massey, Chairman of British National Committee on Space Research, London, and Mr. M. O. Robins, U.K. Project Manager (left to right).



First U.S.-Japanese Sounding Rocket on a 75 mile trip to upper atmosphere. Two Japanese scientists were on hand to witness this international space probe.

U.S.-Japan-U.K. Teams Probe Ionosphere

Two Goddard-managed projects, both launched on the same day, last week advanced NASA's international satellite and space probe efforts.

At 11:00 A.M., April 26, 1962, scientific efforts of the United States and Japan were dramatically demonstrated when the first of three planned Nike-Cajun sounding rockets was launched to a height of 75 miles from NASA's Wallops Island Station, Virginia.

The flight was designed to probe the ionosphere by the simultaneous use of different techniques which were developed independently in Japan and the United States. Two hours later, the U.S. and United Kingdom flew the world's first international satellite, designated Ariel from Cape Canaveral, Florida.

Goddard scientists held key responsibilities in connection with both undertakings.

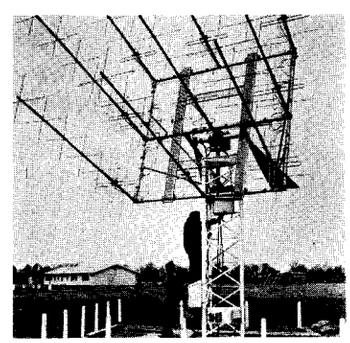
The 133.6 pound spacecraft was launched with a three-stage Delta rocket which boosted it into an elliptical orbit with an apogee of 754 statute miles, and a perigee of 242 statute miles.

This marked the eighth consecutive successful launch of a satellite by a Goddard-managed Delta vehicle.

S-51 Named Ariel

Goddard provided some 112 man years for the Ariel project. The Center was responsible for the design, fabrication, and testing of the spacecraft structure, power supply, telemetry, command receiver, temperature control and data storage. Goddard's Field Projects Branch headed by Robert Gray, provided necessary launch facilities at the Cape.

The spacecraft, designated Ariel after Shakespeare's "The Tempest," was built by Goddard and carried experiments prepared by the United Kingdom to acquire more knowledge of the ionosphere and its complex relationship with the sun.



Goddard's Minitrack station at Winkfield, near London, England, is one of twelve stations which track the world's first International Satellite.

Scientific direction for this joint U.S.-U.K. project was provided by Dr. Homer E, Newell, Director, Office of Space Sciences, NASA, who represents the United States, and Professor Sir Harrie Massey Chairman of the British National Committee on Space Research, London, who represents the United Kingdom.

The Goddard team on this project included:

R. C. Baumann, Project Man-

(Continued on Page 2)

Goddard Scientists At COSPAR Symposium

Goddard scientists this week are participating in the COSPAR third international space sciences symposium.

COSPAR (Committee on Space Research) established by the International Council of Scientific Unions is meeting at the National Academy of Sciences, Washington.

Goddard participants who will present papers include:

N. Spencer, "Mass Spectrometer for the Aeronomy Satellite."

L. Dunkelman, "Middle Ultraviolet Photoelectric Detection Techniques."

G. H. Ludwig, F. B. McDonald, "Cosmic Ray Experiments for Explorer XII and OGO."

R. E. Bourdeau, S. J. Bauer, "Structure of the Upper Atmosphere Deduced from Charged Particle Measurements on Rockets and the Explorer VIII Satellite."

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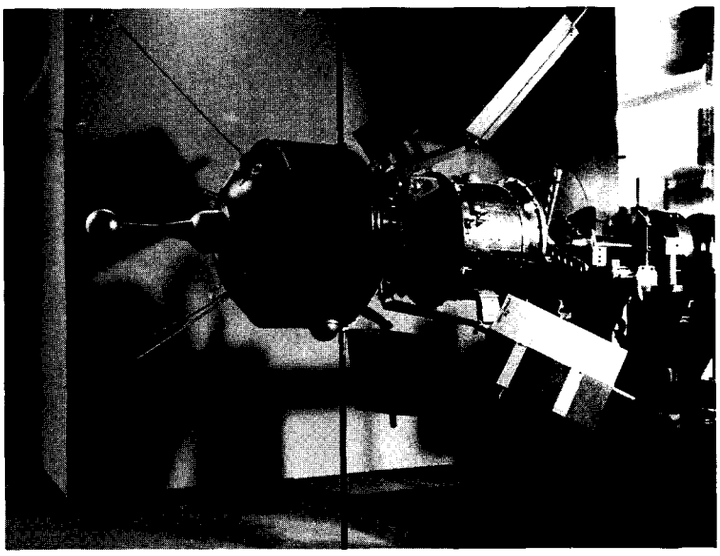

BEFORE LAUNCH . . . Ariel undergoing Goddard test.

International Projects

(Continued from Page 1)

ager; R. E. Bourdeau; Project Scientist; J. T. Shea, Coordinator; H. J. Peake, Telemetry Radio Frequency; R. W. Rochelle; Telemetry Coding; P. T. Cole, Data Storage; J. Schaffert, Programmer and Separation Timers.

Also C. L. Wagner, Mechanical Design; F. Yagerhofer, Power Supply; M. Schach, Thermal Design; W. Hord, Environmental Testing; J. Turkiewicz, Electrical Systems Integration; C. H. Looney, Tracking Systems; John H. Berbert, Tracking Operations; Albert G. Ferris and C. Stout, Data Reduction; Anthony Buige, Operations Control.

In general, the U.K. had responsibility for the design, fabrication, and testing of all flight sensors and their associated electronics up to the telemetry encoder input. In addition, the U.K. handles data analysis and interpretation.

The U.S. was responsible for all spacecraft subsystems except the experiments, and for launching the satellite into orbit. Goddard is performing tracking, data acquisition, and data processing.

Besides the United States and England, six other countries are participating in GSFC's Minitrack Network which is tracking the world's first international satellite.

The spacecraft, which was designed to send information back to earth for a year before its transmissions are automatically terminated, is to be tracked by the following tracking stations:

Antofagasta, Chile; Blossom Point, La Plata, Maryland; Lima, Peru; Quito, Ecuador; Mojave, California; Santiago, Chile; Johannesburg, Union of South Africa; Woomera, Australia; Fort Myers, Florida; St. Johns, Newfoundland; East Grand Forks, Minnesota; Singapore and South Atlantic Data Acquisition Facilities, and Winkfield, England.

Goddard, will receive Ariel telemetry tapes, edit, and process them into digital magnetic tapes and then send them to the United Kingdom for analysis by the scientific experimenters.

Ariel carries six British experiments in an integrated assault on the unknowns of the ionosphere, the radio reflective layer which begins some 35 miles above the earth where the atmosphere is extremely tenuous. In this region, incoming high energy radiations from the sun-x-rays and ultra-violet collide with air molecules and atoms, freeing electrons and leaving positively charged atoms or ions.

After the successful launch of Ariel, UK and US observers at Cape Canaveral were both relieved and exuberant.

British newsmen covering the event shouted "we have gotten the ..... thing off!" and the British "ticketiboo" became an accepted addition to "Canaveralese."

The program involving Ariel originated in a United States proposal to representatives of COSPAR (Committee on Space Research of the International Council of Scientific Unions) in March, 1959. At that time the U.S. Government offered to launch individual experiments or entire payloads designed by foreign scientists, when such experiments were of mutual scientific interest. The United Kingdom was one of the first to accept this offer. Scientific information coming from the Ariel program as well as all other NASA scientific endeavors will be made available to the world scientific community, in conformance with the American concept of conducting an "open" space program.

AT WALLOPS . . . Dr. Kunio Hirao and Mr. Toshio Muraoka attend launching of first U.S.-Japanese Space Probe.

U.S.-Japanese Probe

The U.S.-Japanese experiment consisted of a gold-coated sphere about one-half inch in diameter which is attached to a two-foot boom that projected from the side of the Nike-Cajun rocket.

The Japanese worked on their experiment for nearly three years. An arrangement was made some months ago to fly the instrumentation on U.S. rockets in order to compare techniques. This portion of the payload of the Nike-Cajun rocket was prepared in Japan while the other half was prepared at Goddard Space Flight Center.

The Radio Research Laboratory, Tokyo, Japan supplied a Radio-Frequency Resonance Probe experiment which had been flight-tested on Kappa sounding rockets in Japan. During these flights, the experiment recorded the ionosphere's electron temperature and density at the same time.

Scientists from Goddard, furnished a Langmuir probe, a device which has been used for many years in the laboratory and in rocket flights to measure electron temperatures.

According to Robert Bourdeau, Head of Goddard's Planetary Ionospheres Branch, the Japanese experiment may permit space scientists in the future to use just one instrument to measure electron density and temperature simultaneously, and at a much faster rate.

"The Japanese experiments arrived in this country just two weeks ago for the mating and checkout," Mr. Bourdeau said. "It attests to a fine program of mutual cooperation that we were ready to test flight the experiments in so short a time."

COSPAR

(Continued from Page 1)

D. A. Bryant, T. L. Cline, U. D. Desai, F. B. McDonald, "Cosmic Ray Observation in Space."

L. R. Davis, J. M. Williamson, "Low Energy Trapped Protons."

W. N. Hess, "Electron Loss Rate from the Outer Radiation Belt."

F. B. McDonald, P. B. Butler, "Introductory Remarks on Explorer XII Satellite."

J. P. Heppner, N. F. Ness, T. L. Skillman, C. S. Scearce, "Explorer X Magnetic Field Results."

W. E. Behring, W. M. Neupert, J. C. Lindsay, "Preliminary Solar Flare Observations with a Soft X-ray spectrometer on the Orbiting Solar Observatory."

W. M. Alexander, C. W. McCracken, O. E. Berg, L. Secretan, "Review of Direct Measurements of Interplanetary Dust from Satellites and Probes."

J. A. O'Keefe, "Evidence from the Moon's Surface Features for the Production of Lunar Granites."

R. Jastrow, S. I. Rasool, "Radiative Transfer in the Venus Atmosphere."

T. P. Stecher, J. E. Milligan, "Observational Astro Physics from Rockets: Stellar Spectra."

J. C. Lindsay, "The Orbiting Solar Observatory Spacecraft."

Poetry?

Ye Old Englishe Satellie, or Much Ado About Verie Little

"British satellite may be laumkyed on Tuesday . . . Britain's ahre in the satellite has been to design and build a unique combination of imstruments for space experiments . . . Sir Harrie said that the purpose of the satellie was "purely scientific." Practical applications of the information gained were not a motivating factory. But this did not mean that the experiements would not lead to practical application.

"The experiements are into conditions in the upper atmosphere . . . Tracking stations are waiting to pick up information, relky it to the Goddard Space Flight Centre . . . It had originally been stated that it (Britain's second satellite) would be lkunched about a year after the first, but these things took time . . ." —News agency teleprinter report of Sir Harrie Massey's press conference, April 6.

Quoth Good Sir Harrie, by keene agencie manne bequestioned
Ye Olde Englishe satellie, 'tis the most
Mark well, ere Tuesday next hath come and d'parted
Our long awaited laumkye's here at last

And what a laumkye—there at Cape Canav'ral
On pad sev'nteene, the mighty 'ttempt is plann'd
Then countdowne, lifte-offe, then three cheers for Merrie England
Here's a health unto our satellie, indeed

Dost ask me what 'tis for, this Englishe spacecrafte?
Thou scurvy knave, 'tis scientific purelie
Dost thou not know at all what England's ahre art?
Think'st thou, perchance, 'tis motivating factory?

I'll tell thee what 'tis for, thou worthless peasante
'Tis science, purelie, not a piece of cheese
'Tis based on many boffynnes' brainwaves
At Redbricke universytties

Experiements to fynde electron dens'ties
Instrumentes to seeke their temp'r'ture too
Cosmyck rayes and eye'n mass spectrumme
Three cheeres for ye redde whyte and blue

At Goddard in our great American colonie
Good honeste menne and true
Toiled hard and long to make ye strange-shaped thynge
For themme, a bigge thanke you

Ye Winkfield trackynge station is in bus'ness
To relky information fair and squayre
On what our trustie satellie is doing
Its whereaboutes, and what 'tis lyke up there

We aime to learn ionospherick secrets
And correlayte with myst'rous solar rayes
Environmentallie, how goes itte?
Is't hot or cold or dense, electronnewise?

Meanwhyle, in ELDO, bigger thynges are plann'd
To use, at last, our trustie Blue Streake boost'r
—But other countries seem to have the choice bittes
How so?—Ye blyghters didn't use't'r

Meanwhyle, in ESRO and in space tecknologie
Europe's bigge new centre is at Delft
Another is in Paris, one at Darmstadt
No wonder Farnborough ins't feelynge verie wellft

But on ELDO and on ESRO we are solde, 'tis said
Doubt notte that Europe can and will deliver
Ye credytte goes to Min'ster Peter Thorniecroffte
Who made the sale—right downe ye olde Thames river

So come drinke with me to our satellie
Not much, but all we've gotte
Give me the Goddard bunch for a perfect lkunch
You can keep the other lotte

Later, at Cocoa Beach, Florida, outside the American encampment:

Once more unto the Beach, dear friends, once more
Or close the motel with the English up the wall
In space there's nothing so becomes a man
As modest illness and telemetrie

I see you drink like journ'lists in the bar
Waiting upon the launch. The game's afoot
So down your spirits and upon this shotte
cry "God for Sir Harrie, England and Saint George!"

From Flight Magazine International

New Employment Record

Mr. Robert W. Hutchison, Personnel Director, recently announced that Mrs. Shirley Hendricks, employed in the Space Sciences Division as an Aerospace Technician, was the 1000th person to be hired this fiscal year. Mrs. Hendricks is representative of the unparalleled growth of the Goddard Space complex.

Mrs. Hendricks is a native of Maryland. She graduated from the University of Maryland in 1960 with a BS in general science. She was formerly associated with a research corporation.

Mrs. Hendricks was guest of honor at the Organization and Personnel Division dinner-dance held recently at the Fort Meade Officers Club.

WELCOME ABOARD . . . Mrs. Shirley Hendricks, 1000th newcomer to Goddard in 1962 fiscal year receives congratulations from Mr. R. W. Hutchison, Personnel Director, (left) and a corsage from her husband.

Saturn Aids GSFC Research

The recent successful Saturn launch provided NASA scientists with an important dividend.

Launched from Cape Canaveral on April 25th, only the first stage of the Saturn, the worlds' largest known rocket, was powered. The upper two-stages were inert and ballasted with water to simulate the weight of the live stages.

The two dummy upper stages were filled with 23,000 gallons of water weighing 190,000 pounds.

The first stage burned out after 117 seconds, and 45 seconds later an electronic signal from the ground exploded the rocket, spraying the water over a wide area, 65 miles above the Atlantic, 50 miles east of the Cape.

The release of the water, termed "Project Highwater," was a bonus experiment. Although "Project Highwater" was a Marshall Space Flight Center responsibility, the experiment grew out of a proposal by Dr. B. Donn of GSFC to study comets by putting a simulated, scaled-down, icy comet model in a terrestrial orbit.

The major purpose of the release was to study various atmospheric phenomena.

Extensive optical and radar observations of the cloud were carried out. These will enable deductions of the size, mass, diffusion and disappearance of the cloud to be made.

Atmospheric radio noise measurements produced signals similar to those from lightning flashes.

According to Dr. Donn two of the optical sites, Jupiter Inlet and Grand Bahama Island were prevented from seeing the artificial cloud because of nature's own clouds.

As seen from Cape Canaveral, the burst took 2-3 seconds to expand to about 10 times the size of the moon in a roughly circular pattern. This lasted about 10 seconds and faded out in the bright sky. A fainter trail about, one lunar diameter, followed along the trajectory from the burst and lasted a few minutes. This was presumably caused by water venting out from the second stage which was not completely destroyed, Dr. Donn explained.

Goddard Station Managers Assist Friendship 7 Tour

Friendship 7, the spacecraft in which Astronaut John H. Glenn, Jr., orbited the Earth three times, is about to circle the Earth again. But this time it will make more than 20 stops along the way.

The Friendship 7 tour includes stops in Australia, Bermuda, Spain, Nigeria, Mexico, Great Britain and Zanzibar—nations cooperating with the United States in the Project Mercury tracking program.

Goddard station managers will assist with local arrangements by coordinating station tours, public displays, etc.

Goddard tracking stations involved are:
Bermuda, 19-23 April
Bogata, Columbia, 24-27 April
Santiago, 28-30 April
Buenos Aires, 30 April-4 May
Rio De Janeiro, 4-7 May
Mexico City, 8-12 May
Madrid, Spain, 2-6 June
Accra, Ghana, 18-22 June
Zanzibar, 22-27 June

The itinerary also includes two to four-day exhibitions in France, Japan, India, and Brazil.

Astronaut Glenn will be unable to accompany the spacecraft on the tour because he is assisting in preparations for forthcoming Mercury flights. However, at least one NASA employee will be with the spacecraft at tour stops.

NASA is lending the spacecraft to the U.S. Information Agency which will display it on all continents. Friendship 7 will return to the U.S. in mid-August for the Century 21 Exposition at Seattle, Washington, before being presented to Smithsonian Institution in Washington, D.C. for permanent exhibit.

GODDARD NEWS

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A Look Behind The Scenes

OF THE U.S. SPACE PROGRAM . . . Eight political news writers from Japan recently visited Goddard to get a better idea of what all is involved in orbiting satellites and putting man into space. Their visit to Goddard was part of a tour of major cities in the U.S. sponsored by the Japan Newspaper Editor and Publishers Association and the Asia Foundation. The tour is designed to familiarize the participants with the political institutions and journalistic practices in various countries and in addition to the United States includes visits to France, Germany, Austria, Great Britain, Yugoslavia, India and the Philippines. Here, the Japanese newsmen and their two interpreters listen to Mr. Harold Hoff explaining Goddard's Operations Control Center.

GERMAN AEC VISIT . . . Dr. Harry J. Goett, Director of GSFC, here greets Dr. Siegfried Balke, Minister of the Atomic Energy Commission of the Federal Republic of Germany. Dr. Balke and his party of diplomats and technical aides visited GSFC recently for an afternoon of discussion and tour with Drs. Goett and Townsend. Dr. Hans Sauer (left) and Mr. Hans von Martius (right) accompanied Dr. Balke.

Dr. Elias Klein Receives First Honorary Fellow Award From IES

At the Institute of Environmental Sciences Technical Meeting held in Chicago, April 11th through 13th, Dr. E. Klein received the first Honorary Fellow Award from the Institute.

In addition to his many teaching assignments, Dr. Klein has completed thirty-one years of government service. He retired January 31, 1959. Dr. Klein has served as consultant to the Test and Evaluation Division of Goddard since March 1959.

Softball Season Off To A Start

The Goddard softball season is entering its second year in competition in a recognized league. The Goddard team will participate in the D.C. Recreation League.

The league will play all games at the Taft Playground, at South Dakota Avenue and Eighteenth Street North East, Washington, D.C.

The league is comprised of six teams. Saint Elizabeth, Sealtest, The Hecht Company, Civil Air Board, J.I.A.T.O. Number two, and Goddard.

Practice will be held at Greenbelt field on May 1, 3, 8, and 10 at 5:00 p.m.

The first game will be played on May 11th, 6:30 P.M., Field Number 1, Goddard versus J.I.A.T.O. Number two.

All interested personnel wishing to join the team are invited to contact Mr. W. Smith, Building 6, Room 5201, Extension 4621 or 4622.

GSFC Coming Events

May 16—Trailer Exhibit . . . GSFC will sponsor a trailer exhibit of instruments by Minneapolis-Honeywell Regulator Company. The Exhibit will be open from 9:30 a.m. through 3:30 p.m., it will be located near the loading platform, Building 2. Mr. William A. Strain will be available to answer questions.

May 16—Evening Tour . . . of GSFC by American Rocket Society, National Capitol Chapter.

Goddard employee members of ARS are requested to contact R. Roche, X 4142 to serve as hosts and guides.

May 19—Goddard Wives Club Dinner Dance at Prince Georges Country Club . . . Cocktail hour, 7:00-8:00 p.m., Dinner 8:00 p.m., Dancing Ira Sabin Orchestra from 9:30 to 12:30. Informal dress, $4.00 per person (members), $6.00 per person (non-members). Beverages available at reasonable prices. For reservations contact, Mrs. Dorothy Cinciripini, HE. 4-4405.