GODDARD NEWS

GODDARD SPACE FLIGHT CENTER / GREENBELT, MARYLAND

VOLUME V, NUMBER 11 — THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION — NOVEMBER 4, 1963

Rosman Dedication Ceremony Precedes Site's Open House

More than 1,000 North Carolinians were on hand October 26 for the dedication and open house at Goddard's Rosman data acquisition facility near the little town of the same name. They beheld a sight of rare beauty as they rounded a final curve and the 85-foot dish sprang into view against a background of natural foliage.

The surrounding Pisgah National Forest was in its autumn best, and the white antenna stood out in bold relief. Hurricane Ginny discreetly kept her distance, so clear skies and warm sunshine prevailed. Rows of folding chairs facing the antenna, made the site resemble an outdoor amphitheater.

The ceremony, with U.S. Congressman Roy A. Taylor serving as master of ceremonies, was well received. Governor Terry Sanford, who had been greeted earlier by Dr. Michael Vaccaro, assistant director for administration, stressed his state's interest in and resources for space age research.

During Dr. Goett's speech, the Goddard director demonstrated the SCAMA telephone hookup linking all STADAN (space tracking and data acquisition network) stations. The visitors heard amplified voices from around the world as other facilities greeted and congratulated the Rosman station.

At one point in his remarks, Dr. Goett said, "You have all heard much discussion on 'man-in-space' and whether our exploration of space should be done by manned or un-manned vehicles. The point frequently missed is that man will always be a vital participant in the process—whether he sits in the vehicle as did Glenn and his fellow astronauts—or at the control panel of the Rosman antenna.

"That dish gives the man at the console 'sensitive ears' so that he can observe what occurs in the spacecraft at distances of hundreds or thousands of miles—and 'long arms' so that he can reach out by the commands he sends to the spacecraft to point it when he wants to look at the moon, planets, or the stars."

Mayor Hogsed of Rosman welcomed Goddard's station director, Gary Dennis, as "the newest Tarheel."

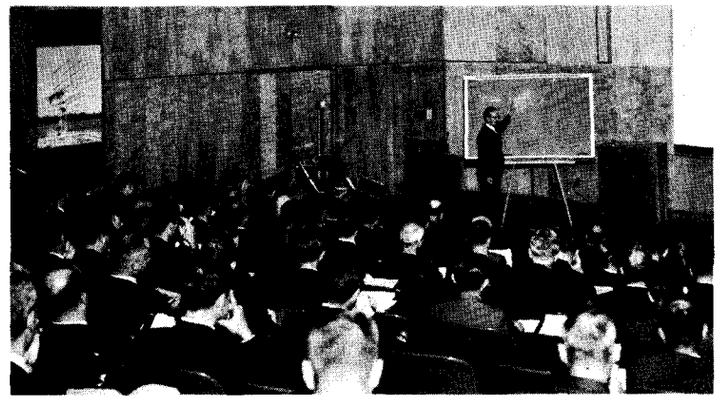
Other key speakers were U.S. Senator B. Everett Jordan and Dr. George L. Simpson, Jr., NASA's assistant administrator for technology utilization and policy planning.

Hal Hoff, associate division chief for network engineering and operations, wound up the ceremony riding a "cherry picker" (a truck with an extendable boom) up to the face of the antenna. There he explained the functioning and the design of major components.

Also present from Goddard were: Eugene Wasielewski, associate director; John T. Mengel, assistant director for tracking and data systems; and Lloyd Hightower, head of the engineering support office and Rosman I project manager.

A member of the U.S. House of Representatives from neighboring South Carolina, the Hon. William Jennings Bryan Dorn, was a guest at the dedication, as was North Carolina Congressman Horace R. Kornegay.

(Cont'd. with pictures, on pp. 4 and 5)

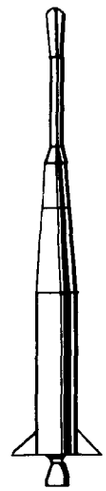


Solar Flares Symposium Here

More than 175 scientists from this country and foreign nations convened at Goddard Oct. 28, 29 and 30 for a symposium on the physics of solar flares. The gathering—first of its type ever held—was cosponsored by NASA and the American Astronomical Society. Its objective was to exchange the latest data on the origin, cause and effect of solar flares. These flares are defined as the sudden increase in intensity of the light of hydrogen in a restricted area on the sun. Some solar flares are associated with the discharge of electrically charged particles into space and the production of solar radio bursts. Scientists attending the symposium represented various governmental agencies, universities, observatories and industry. The sessions were divided into two major sections: observations of flares and flare theories. Dr. Wilmont Hess, chief of Goddard's theoretical division, was in charge of the symposium.

NASA is Negotiating Delta Launch Contract

NASA will negotiate with Douglas Aircraft Co., Santa Monica, Calif., to renew a contract for launch of Goddard managed Delta space vehicles during 1964.



DELTA

This $5 million contract for the 12-month period calls for inspection, assembly, check out, and launch of Deltas at Cape Canaveral's Complex 17. It calls for a launch rate capability of *one vehicle per month* during 1964.

Douglas developed the Thor-boosted Delta which, under the direction of Goddard's field projects branch, has achieved a record of 19 consecutive successful launches over the past 38 months.

Under current contracts, NASA has 20 Deltas on order in addition to 20 already launched.

Delta, started in 1959, has been NASA's workhorse launch vehicle, having launched Syncom, Tiros, Echo, Telstar, Relay, Orbiting Solar Observatory I and several of the Explorer series scientific satellites.

Tiros VI Finishes Record Tour of Duty

Tiros VI, whose first birthday was reported in the Oct. 7 issue of GODDARD NEWS has stopped transmitting useable cloud pictures after a record of 13 months of successful operation—more than three times its expected lifetime.

A malfunction in the focus current regulator is causing distortion in the pictures being transmitted by the "old" satellite.

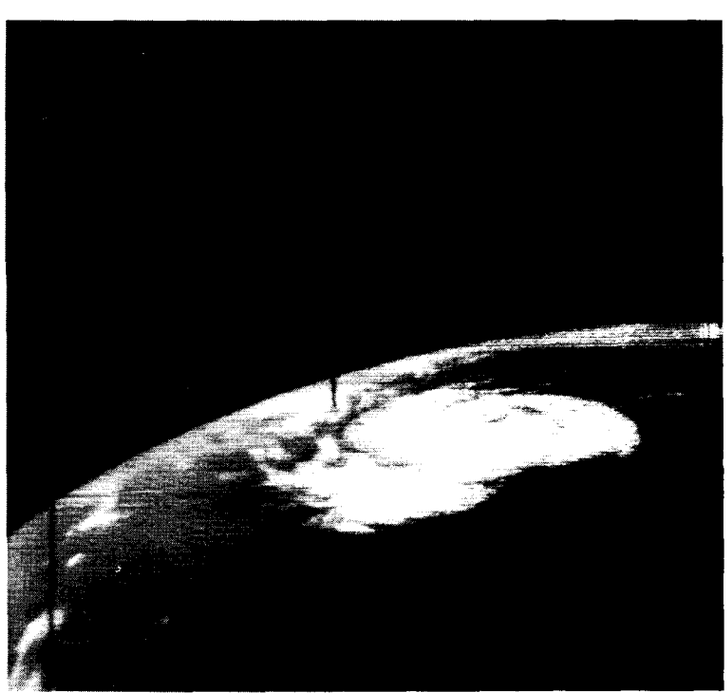
Except for this one item, all parts of the spacecraft system are operating normally. Goddard engineers are conducting a series of experiments to determine why the focus current regulator is malfunctioning and what, if any, corrective action can be taken.

In retrospect, we are picturing a scene on the satellite's first birthday, when Goddard Tiros personnel presented a birthday cake to the Radio Corp. of America contractors who are part of project Tiros.

Tiros spacecraft are expected to last only from three to four months. However, all but Tiros I have exceeded this lifespan. Tiros VII, launched in June, is still providing cloud cover pictures.

An example is this photograph of hurricane Ginny, which was much in the news during October. Ginny was discovered by Tiros VII.

Tiros VI's last birthday—(front row, from left) John Maskasky, Goddard spacecraft manager; Abe Schnapf (seated), RCA project manager; Ed Mowle, RCA spacecraft engineer; and Bob Golden, Goddard's spacecraft engineer. (back row) Marv Harper, RCA; Luther Eames, Goddard; Al Riley, Goddard; Glen Corrington, RCA; Rex Waddell, RCA; Jeff Albert, Weather Bureau; and Sid Lowenstern; Goddard.



Tiros VII, which is still in service, snapped this picture of Hurricane Ginny during her early stages in mid-October.

Three Goddard Scientists Receive Patent Awards

Three patent awards have been announced resulting from research at Goddard. Awards went to Goddard employees for a despin mechanism, an electromechanical analog multiplier, and a full binary adder.

Dr. Joseph V. Fedor, mechanical systems, and Henry J. Cornille, who is no longer with Goddard, received a joint award of $800 (to be divided equally) for their stretch yo-yo despin mechanism. The device is an improvement on the standard yo-yo despin mechanism (see *How It Works*, Dec. 31, 1962 GODDARD NEWS). By the use of stretching, resilient cords instead of rigid ones, the new system has a built-in means for variation from the initial spin rate of the space vehicle.

David Schaefer, flight data systems, was awarded $300 for his patent of a full binary adder which has applicability to spacecraft. Its simplified design uses a smaller number of parts than any other known full adder. This factor contributes to weight saving and reliability so necessary for a unit to be placed on board a spacecraft.

Raymond J. Hartenstein, structural dynamics, received $50 for his electromechanical analog multiplier. Its novel feature is the manner in which the strain gauges are varied in the Wheatstone bridge (a device for the measurement of resistances) to unbalance the bridge proportional to the variable voltage input.

(Pictures on p. 6)

News About Space & Aeronautics

● Joseph A. Walker, NASA's chief research pilot and the man who has set world records with the rocket-powered X-15 research plane, has been awarded the Christopher Columbus International Prize for Communications by the City of Genoa, Italy.

The Columbus medal is presented each year on the birth anniversary of the famous Genoese navigator and explorer during the annual International Communications Conference in Genoa.

• • •

● Pictured here is an exact reproduction of the only amateur satellite ever to be launched into orbit anywhere in the world. The specimen is called OSCAR for short, but its full name is *Orbital Satellite Carrying Amateur Radio.*

A group of radio amateurs were responsible for development of this example of private initiative. Working evenings and weekends in basements and attics, these men, representing a variety of business and professional talents, put together their satellite at an out-of-pocket cost of $63.47.

Their idea was to build a miniature shortwave transmitter, then get it aboard a capsule bound for space, a spaceage version of "piggy-back."

On December 12, 1961, just after noon, Discoverer XXXVI, headed upward into a Polar orbit. The space-hitchhiker, OSCAR, was aboard and soon separated from the Discoverer spacecraft and took up its own orbit.

During the following three weeks the little 10-pound satellite sent out its cheery signal in Morse code—four dits—spelling "Hi." Before it had completed its three weeks of whirling around the globe, its signal had been picked up by 570 radio amateurs in 28 countries.

This replica of OSCAR is now on display at the Smithsonian Institution.

• • •

● The first television experiments via Syncom II have been carried out successfully.

Test patterns signals were sent recently, by TV pictures. Because of bandwidth limitations, no audio was sent during the tests.

Goddard officials said the transmissions were of good quality. The Syncom system was not designed for TV, but for two-way telephone, teletype and facsimile transmissions between relatively small, portable ground stations. Therefore, it has only enough power for the video part of TV transmission.

• • •

● Goddard has named International Telephone and Telegraph Corporation's Federal Laboratories to develop a communications package for the Nimbus second-generation meteorological satellite.

The contract calls for design and development of a solid-state one-watt transmitter to send back weather information gathered by the orbiting satellite.

Each Nimbus will carry at least two such units. The resulting redundancy will enable one to be used as a backup. The package weighs five pounds.

Impetus

Editor's Note: This column of thoughts from various quotable sources will run whenever ideas are available which fit this definition—"comments which give impetus to the creative mind; which stretch and exercise the intellect." Publication does not necessarily imply endorsement.

"One of the pieces of legislation that passed over Abraham Lincoln's desk during the Civil War was a bill proposing a National Academy of Sciences. Lincoln signed the measure on March 3, 1863. . . .

"Today, 100 years later, other proposals concerning science and engineering are being considered in the halls of Congress.

"New Jersey's George Wallhauser has introduced in the House of Representatives a bill that would provide for establishing a U.S. Science Academy. The proposal would create a 12-man commission to study the feasibility of a U.S. Academy under the Secretary of Health, Education and Welfare. The commission would have four members selected by each government branch—executive, legislative and judicial; two of the four members from each branch would be chosen from private life.

"The proposed Academy would be for students in the physical sciences, mathematics and engineering. . . .

"The bill was referred to the House Science and Astronautics Committee on January 17, where it is awaiting hearings.

"A second bill, HR1012, seeks to establish a National Science Academy under the National Science Foundation. (It took five years of Congressional debate before this agency was organized in 1950.) The bill would provide a 5-man commission and a director of the Academy. . . .

"Under the proposal, the government would select 'science trainees' for intensive studies in science and engineering. The trainees would become officers and employees of the federal government for a specific period. Educational qualifications would be determined by the National Science Foundation. Trainees would have to be at least 17, and not more than 25 years of age.

"The bill, introduced by Congressman Peter W. Rodino, Jr. of Newark, was referred to the House Science and Astronautics committee on Jan. 9; it has not yet been scheduled for hearings. The House committee has been occupied for most of this session with hearings on NASA appropriations.

"These proposals—each with its pros and cons—indicate an increased awareness on the part of government of the need to advance education in the sciences and engineering. An estimated 3.6 per cent of the nation's work force is engaged in science and technology, and more than $17-billion is spent on R. & D. each year, making it a major part of the American economy.

"Major questions are—Does science and engineering need government help? And if so, of what type?"—*from Bell Lab News*

GODDARD NEWS

"It is difficult to say what is impossible, for the dream of yesterday is the hope of today and the reality of tomorrow."
—Dr. Robert H. Goddard

The Goddard News is a bi-weekly publication of the National Aeronautics and Space Administration's Goddard Space Flight Center, Greenbelt, Md., suburban Washington, D. C.

Phone—Ext. 4141 or 4142

Bruce Brough, *editor*—Shirley Deremer, *Inside Goddard*

State, Local and NASA Leaders Dedicate Rosman Site —

Two little girls from the area near Rosman, N. C. are impressed by a pushbutton on a computer control panel.

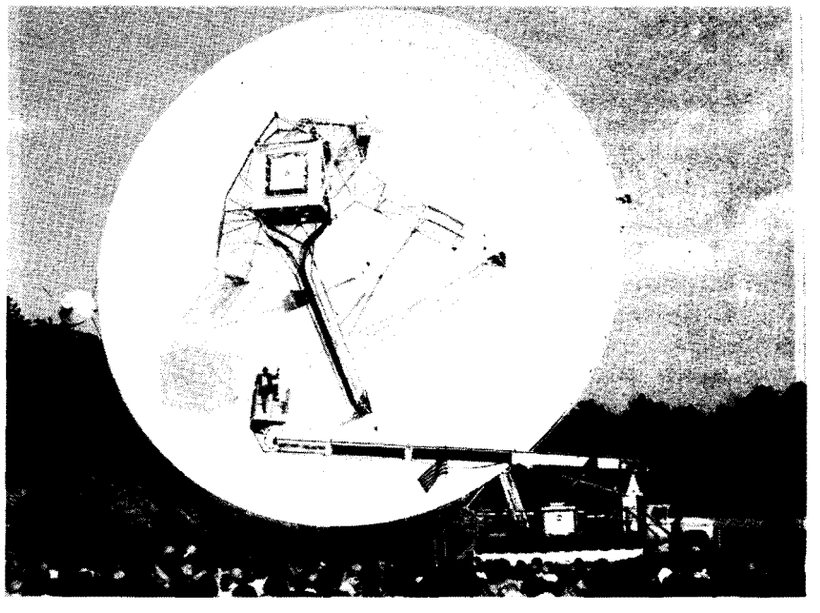
Julian Scheer, NASA's assistant administrator for public affairs, was present from NASA Headquarters in Washington.

Press coverage before and after the dedication was especially noteworthy. Daily papers, television and radio stations carried numerous stories on the ceremony and open house. One prize-winning local weekly, *The Transylvania Times,* devoted a full page to an invitation to Carolinians to attend. After the event, the *Asheville Times* carried a front-page photo story on the facility.

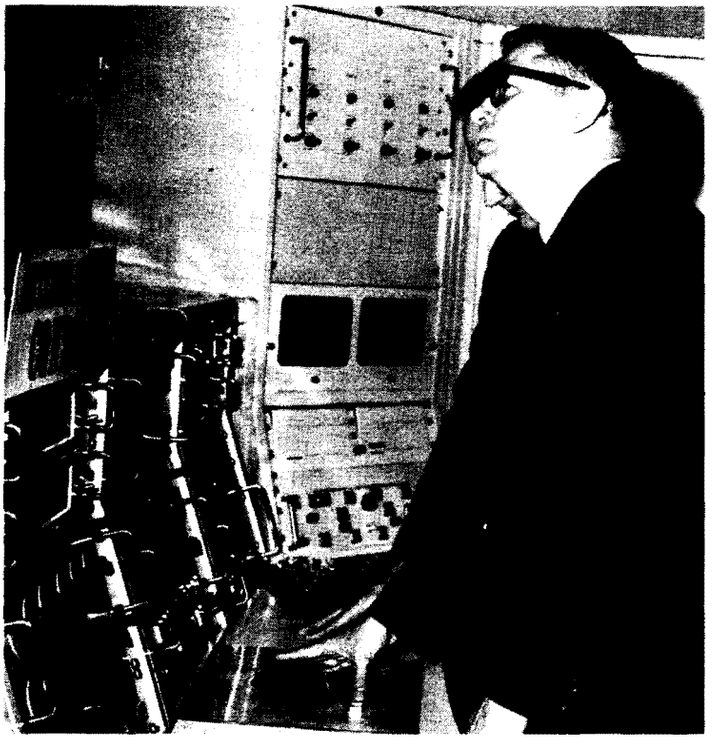
After the nearly 200 special guests of the Governor had departed (they received a tour of the facilities and a luncheon earlier), the crowd entered the control building and took a closer look at the antenna. At each point, technical personnel were waiting to answer questions and demonstrate the equipment.

Children were especially enthusiastic. One, when given some

(Cont'd on p. 5)



Goddard's Hal Hoff, shown here in the "cherry picker," explained the components of the antenna to the visitors.



Governor Terry Sanford of North Carolina is shown here at the "bowling ball" control panel which moves the antenna.

Some NASA and North Carolina officials are shown here during a tour of the control building—(from left): U.S. Congressman Roy A. Taylor; U.S. Senator Everett Jordan; Dr. George L. Simpson Jr., NASA's assistant administrator for technology utilization and policy planning; Governor Terry Sanford; Dr. Harry Goett; Eugene Wasielewski; and John T. Mengel—the latter three of Goddard.

Goddard's 5th Honorary Service Awards Ceremony

Twenty and 30-year honorary service emblems were presented to 199 Goddard employees recently. Eugene W. Wasielewski, associate director, made the presentation at the Center's Fifth Service Emblem Award ceremony in the auditorium of building 8.

Six awards for 30 years of government service were presented. Recipients were Rupert S. Cornett, test and evaluation division; Edward W. Hines, facilities engineering divison; Samuel S. Katsef, fabrication division; John L. Kensinger, procurement division; John W. Larmer, fabrication division; and Joseph Manning, management services and supply division.

Receiving pins for 20 years of service were 193 employees. The 10 and 15-year awards will be presented in separate ceremonies arranged by assistant directors and the chief of technical services.

Goddard employees are awarded honorary service emblems in recognition and appreciation of faithful service to the NASA and to the citizens of the United States. The emblem is a replica of the NASA insignia.

The 20, 30 and 40 year emblems are bordered in gold with the sky background in blue enamel; the wing configuration is in red enamel. The elliptical flight path and the randomly placed stars are in gold. A precious stone distinguishes the length of service. The 40 year award is a diamond; 30 year award, emerald; 20 year award, ruby; 15 year award, gold; 10 year award, silver and one year award, bronze. The 1, 10, and 15 year emblems are solid cast.

Music for the program was supplied by the United States Air Force Combo "The Top Hats." Robert W. Hutchison, chief organization and personnel division made introductory remarks.

In recognition of their achievements throughout the year 1962, 1963, Goddard personnel received the following awards:

Outstanding Leadership — Dr. John W. Townsend, Jr., assistant director, space sciences and satellite applications.

Exceptional Scientific Achievement — Dr. John C. Lindsay, associate chief, space sciences division and Robert E. Bourdeau, head, ionospheres branch.

Robert Hutchison gives opening remarks at ceremony.

INSIDE GODDARD

GODDARD SPACE FLIGHT CENTER / GREENBELT MARYLAND

November 4, 1963

Group Achievement Award — the directorate for tracking and data systems, the delta project group and the Tiros project group.

Federal Woman's Award — Eleanor C. Pressly, spacecraft integration and sounding rocket division.

National Institute of Public Affairs Career Education Award — James R. Keene, organization and personnel division.

Goddard Research and Study Fellowships — Barney J. Conrath, aeronomy and meteorology division; Charles R. Laughlin, project resources office and Kazem Omidvar, theoretical division.

Eugene W. Wasielewski (left) presents Joseph Manning his 30 year pin.

20-Year Service Awards

George E. Abid
Daniel J. Alion, Jr.
Calvin F. Allison
Robert B. Appleby
George E. Barsh
Maurice H. Beaton
William B. Beauchamp
Ira R. Beckner
Walter Behrens
Otto E. Berg
Joseph Berliner
James M. Billingsley
Edward E. Bissell, Jr.
Lyle D. Bonney
Andrew J. Boschert
Robert E. Bourdeau
Joseph C. Boyle
James M. Bridger
Thomas K. Bruce
Richard M. Buckingham
William Y. Burgess
Harry Burton
Edward V. Caffo
Willis S. Camprell
Benjamin F. Carrick
Elmer J. Carter, Jr.
Roderick E. Carter
George A. Cassels
Margaret E. Chisholm
George G. Coletto
Mason R. Comer, Jr.
David R. Corbin
Frank G. Cuzzolina
Leo R. Dale
Robert N. Dasher
Andrew V. Davis
Russell E. Dorrell
John A. Duncan
Jay H. Dyson
Earl M. Ealy
Henry E. Ernst
Arthur L. Essex
Edmund H. Estes
Harold R. Etter
William J. Fahey
Samuel D. Falbo
James J. Fleming
John Flowers, Jr.
Louis J. Foltyn
Leon L. Fontaine
James D. Furr
Fred O. Gault
Sol H. Genatt
Frank J. Gill, Jr.
Virgil F. Goblirsch
Edmond J. Golden
Ben Goldman
Emanuel Gordon
Charles R. Grant
Charles L. Graefe, Jr.
Franklin A. Greer
J. Russell Groves
Norman J. Haiflich
Charles E. Hall
Lillian W. Halter
Glenn Harvey
Albert L. Hedrich
Niles R. Heller
James B. Hendrix, Jr.
Charles E. Henley, Jr.
Varice F. Henry
Catherine T. Herberger
Leroy K. Hines
Hubert H. Hinton, Jr.
Karl B. Hoepfner
Charles W. Hoffman
Frank J. Holley, Jr.
Douglas G. Hoover
Wilber B. Huston
Hayes T. Jackson
Henry N. James
William L. Jenkins
Louis B. Jennings
Ellen C. Johnson
Robert B. Johnson
Abe Kampinsky
Dwight C. Kennard, Jr.
Fred L. King
Clarence R. Kinley
Murray Klein
William H. Koblhafer, Jr.
Herman E. Lagow
Owen B. Laing
William E. Leatherbury
Roy J. Le Doux
John W. Lindstrom, Jr.
Edward A. Lochel
William J. Logan, Sr.
Otto P. Lund
Robert J. Mackey, Jr.
Brim C. Marcus
Raymond F. Maryman, Jr.
Raymond H. Massey
Chester A. Matthes
John T. Mengel
Brice W. Miller
Howard A. Miller
Ernest J. Mosher
Charles F. Moubray, Jr.
Howard N. Murray
Fred R. Nemir
Harry E. Nichols
John F. O'Connor
Robert W. O'Steen
Joseph A. Oktavec
Kendrick W. Parks
C. Leland Parsons
Willard C. Passo
Stanley P. Patro
Robert L. Porter
Nathaniel Price
Joseph F. Proff
Jesse J. Purvis
Howard L. Quan
Paul W. Reuter
Paul R. Rexroad
Francis E. Richards
Joseph A. Richards
Lawson E. Richtmyer
Fred E. Ringe, Jr.
Ernest E. Ritchie, Jr.
Louis C. Robinson
Thomas Rosenberg
Irving J. Ross
Charles A. Rouiller, Jr.
Berlin W. Ruleman, Sr.
Ruby K. Russell
Baker H. Sabb
Kennard R. Saffer
Benjamin Schlachman
Moe I. Schneebaum
Clarence A. Schroeder
Joseph B. Schwartz
Allen P. Sears
William J. Sharpe
Robert B. Shifflett
James H. Shisler
John D. Silagi
Arthur F. Silfies, Jr.
Ben H. Simmons
Wilson H. Simms
Bernard Sisco
Thomas L. Skillman
George B. Smith
James L. Smith, Jr.
William S. Soar
John P. Soden
Edwin L. Staubus
John K. Steckel
Joel S. Steel
Bruce M. Stennett
Robert H. Stewart
Margarett C. Stitt
Annie B. Stockes
Eugene R. Stroup
James F. Suite
Philip C. Swartz
Ralph E. Taylor
Vernon L. Thames
James W. Thompson
John F. Thompson
Eugene Trapani
Charles W. Trotter
Hugh A. Turnbull
Roland L. Van Allen
Robert F. Vogelsang
Robert H. vonRoeder
Anthony M. Votta
John G. Waldmann, Jr.
William G. Walrath
James W. Walsh
Max Weiner
Joseph J. West
Ernest G. Whitney
Meredith W. Wilson
Woodrow W. Wines
Robert W. Wolfe
Walter H. Wood
Ernest C. Woodhouse
J. Howard Wright
Harold E. Wrightsman
William B. Young
Emile Zugby

Rupert S. Cornett

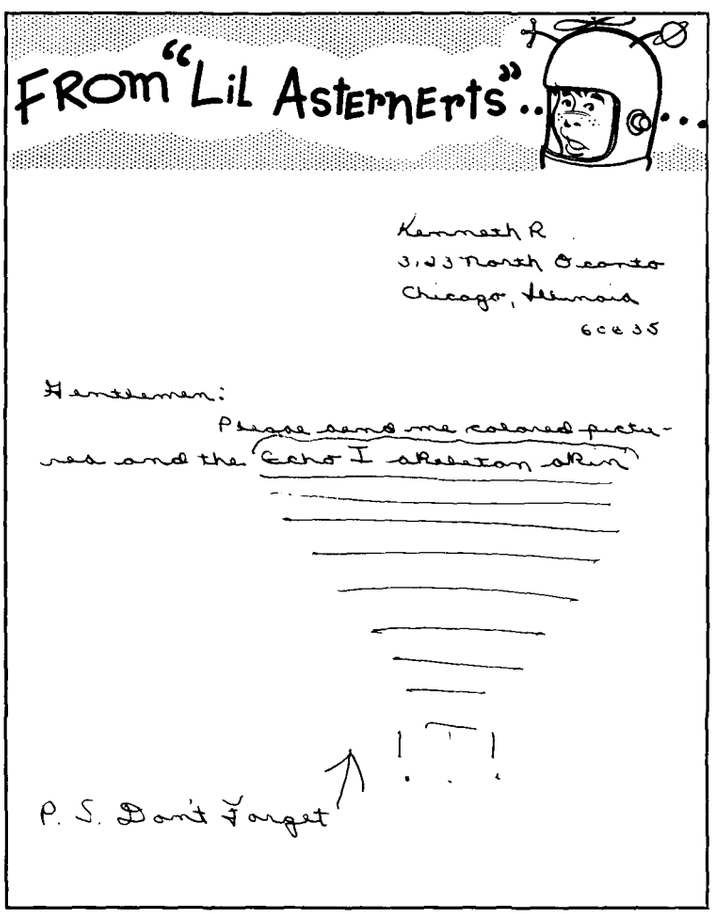
Edward W. Hines

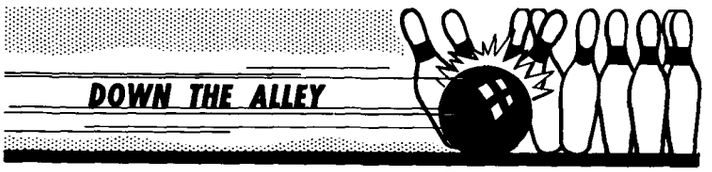
THIRTY YEAR SERVICE AWARDS

Samuel S. Katsef

John L. Kensinger

John W. Larmer





GODDARD MIXED TENPIN LEAGUE STANDINGS

Tuesday
(As of Oct. 15, 1963)

	W	L		W	L
Longshots	17	3	Team No 13	11	9
Team No. 1	16	4	Mystics	9½	10½
Team No. 5	15	5	Hopefuls	9	11
Team No. 7	12	8	Bushwackers	9	11
Photo-Multi-pliers	12	8	Team No. 8	8	12
			Rookies	7	13
			Pin-Rattlers	6½	13½

GODDARD MEN'S TENPIN LEAGUE STANDINGS

Wednesday
(As of Oct. 23, 1963)

	W	L		W	L
Quiet Ones	20	8	Rackets	13	15
Gubaths	18	10	Once	12	16
Bandits	17	11	Snakeyes	11	17
Outcasts	16	11	Vibrators	11	17
The Junto	14	13	Rabs	11	17
Boxcars	14	14	Keglers	10	18

GODDARD MIXED DUCKPIN LEAGUE STANDINGS

Tuesday
(As of Oct. 16, 1963)

	W	L		W	L
Bluffers	13	5	Dukes & Duchesses	9	9
Alley Catz	12	6	Alley Nauts	8	10
Comets	11	7	Toppers	7	11
Bob Cats	11	7	Vagabonds	6	12
Cole's Coolies	11	7	Possibilities	6	12
Ducklings	9	9	Moonshiners	5	13
Quicksilvers	9	9			
Stargazers	9	9			

Thursday
(As of Oct. 24, 1963)

	W	L		W	L
Woodchoppers	17	7	Syncoms	12	12
Tick Tocks	16	8	Space Katz	11	13
Astronauts	15	9	Bobcats	11	13
Safety Pins	14	10	Moon Pilots	10	14
Starliters	13	11	Satellites	9	15
Wombats	12	12	Meteorites	8	16
Thor Heads	12	12	Strikers	8	16

Concerts At Special Rates For Employees

The National Symphony Orchestra has received foundation support for a new series of Sunday afternoon concerts to be inaugurated this season on November 24 at 4 p.m. in Constitution Hall. Under the sponsorship of the National Foundation for the Arts in Industry, the concerts are to be performed at special low rates for Federal employees and their families.

There will be subsequent Sunday afternoon performances on January 26, February 23 and March 22.

Federal employees who buy their tickets in advance will receive a special reduced rate of $1.50 for each concert. The same tickets will cost $2.25 at Constitution Hall.

Howard Mitchell will conduct the concerts and will give spoken program notes from the podium.

The soloist at the November 24 concert will be the celebrated young pianist from Israel. Daniel Bareboim, who will play a Grieg Piano Concerto.

For the rest of the program Mr. Mitchell has chosen the Royal Fireworks Music by Handel, the Prelude to Lohengrin by Wagner, and Tchaikovsky's Suite from the Sleeping Beauty.

Those interested watch for a special announcement specifying where tickets may be purchased for the advanced sale.

You Are A Member . . .

GEWA

(Goddard Employees Welfare Association)

Did you know that . . .

The Goddard Employees Welfare Association's next dance will be a "Ship-Wreck dance" aboard the S.S. George Washington — the "Flagship" of the Wilson Line.

Pier four, at Main Ave. and N. Street, is where the action will take place for the dock-side affair on November 16. You can Twist, Charleston and Paul Jones to the music of Johnnie Leaman's Band from 9 p.m. 'til 1 a.m. The dress is optional —informal — wear slacks and sport shirts. Don't worry about the weather, the George Washington has been winterized and is heated on all three decks—but for the top deck bring your own heater.

For those interested in snacks the bar on the lower deck will be open.

You can enjoy all this for only $1.75 per person, which includes all set-ups (BYOL).

Don't forget, wear casual clothes (not scuba gear) and the date is November 16.

Those interested in attending may contact: OA—Harry O'Toole, or Fay Satterfield; Office of Technical Services —James Lyndell or George Honeycutt; SS & SA—John Libby, Roland Van Allen, Sue Boulware; T & D—Richard Preston or Shirley Day.

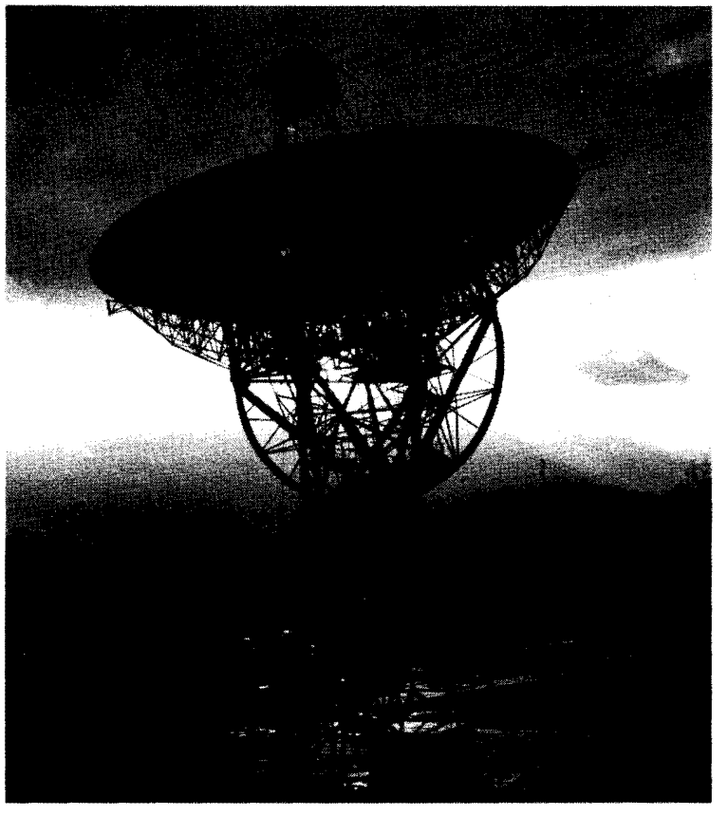
Thousand Attend Open House

ticker tape from the teletype machine remarked, "Now I'm *sure* to get an A in science."

Adults were amazed at the way the huge antenna is controlled by a duck pin bowling ball (used to direct the position of the dish) set into the control panel.

From farmers and citizens of mountain villages to the governor of the state—North Carolinians welcomed the Rosman data acquisition site to their midst, and its personnel to their community. The station will hold open house again during the first two Sundays of November.

Ron Craig and Keith Walters of the photographic branch have provided a panorama of pictures—worth thousands of words—to chronicle the event and bring it "home" to Goddard.

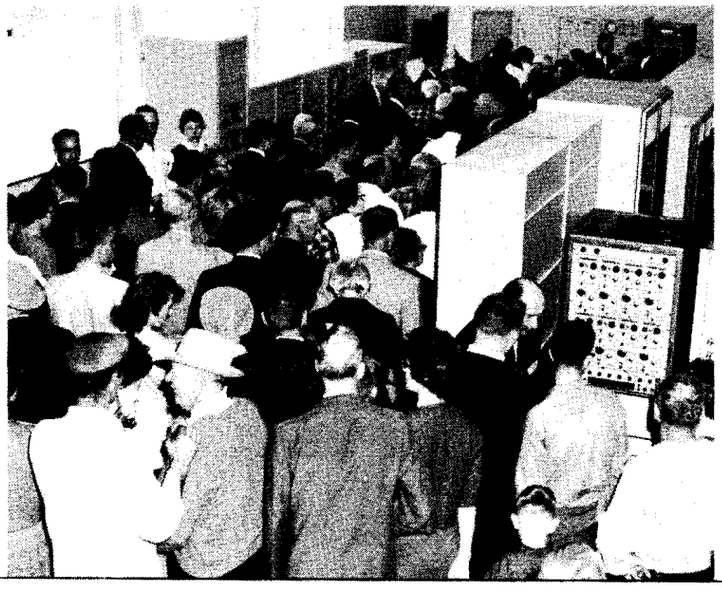


This scene at the Rosman antenna site was taken near sunset on the day before the dedication and the crowd.

Two boys at open house were enthusiastic about this ticker tape. The two girls from Rosman hope to untangle the mess.

Gary Dennis, Goddard's Rosman station director (center) looks on as his son talks to an Australian youngster on the tracking network's SCAMA phone. At left is Bob Geier, head of the center's communications techniques office.

This is the control room for the big dish antenna as the open house crowd moved inside to get a closer look.



Jean Richards (right), management services and supply division, is addressing this session of the secretarial training sequence on the topic, "Federal Telephone System."

Secretarial Training Courses Begin and End in Late Oct.

One secretarial training program has been completed and the second has just started according to James Reese, head of Goddard's employee development branch. More than 55 volunteers have signed up for the after-hours refresher shorthand course which started last Tuesday and will continue two days a week for seven weeks. An average of 280 attended each session of the center-wide secretarial training course which ran from Oct. 15-Nov. 1.

In the latter course, which consisted of two hours of intensive training once a week for three weeks, the secretaries had the following fare:

Session 1 (offered on Oct. 16 and 17 to allow divisions to schedule half their secretaries to each section)—"Responsibilities of the Secretary" by Dean C. L. James, University of Baltimore; and "Telephone Courtesy" by Mrs. Hilda Catella, C&P Telephone Co.

Session 2 (offered on Oct. 22 and 24)—"Federal Telephone System" by Mrs. Jean Richards, management services and supply division; and "Secretarial Shortcuts" by Miss D. Kempton, National Foreman's Institute.

Session 3 (offered Oct. 31 and Nov. 1)—"Effective Listening" by William Medina, employee development branch.

New secretaries will be given a slightly longer program. All secretaries who have joined Goddard since June of this year will attend two additional sessions:

Session 4 (Nov. 5)—"Goddard Handbook" by Mrs. Alberta Moran, office of the director.

Session 5 (Nov. 7) — "Forms Management" by Fred Charles, management services and supply division; and "Use of Policies and Procedures Manual" by Alex Lawrence of the same division.

The series of five sessions, taught by Goddard personnel, will be repeated throughout the year for new secretaries as they join the staff.

Refresher Course Offered

The refresher course in shorthand is being offered to upgrade the skills of secretaries who are now using shorthand in their work. This course started Monday, Oct. 28, and will be given each Monday and Wednesday for seven weeks. Sessions last from 4:30 to 6 p.m.

A second group, consisting of the more experienced stenographers, will begin their seven-week session this afternoon.

Employee development officer Bill Medina stresses, "This is not a beginners course." Speed drills will be included, and exercises will be provided to increase the symbol vocabulary of those participating.

Under special contract, Gregg shorthand symbols have been devised for the technical vocabulary listed in Goddard's publication *Glossary of Terms Used in the Exploration of Space.* These symbols will be part of the after-hours course.

Patent Award Winners

(story on page 2)

Dr. Joseph Fedor ←

David Schaeffer

→ *Raymond Hartenstein*

U. S. - French Shot is Successful

A French experiment package was launched October 17 by a NASA Aerobee 150A in a cooperative program to investigate very low frequency radio wave (VLF) propagation in the ionosphere.

It was the first phase of a joint effort of the French National Center for Space Studies (CNES) and the National Aeronautics and Space Administration to obtain data in the ionosphere.

The Aerobee was launched from Wallops Island at 12:50 p.m. EDT. The 197-pound French payload reached a peak altitude of approximately 116 statute miles. Seven minutes of scientific data was telemetered to ground stations before the payload impact in the Atlantic 59 miles from the launch site.

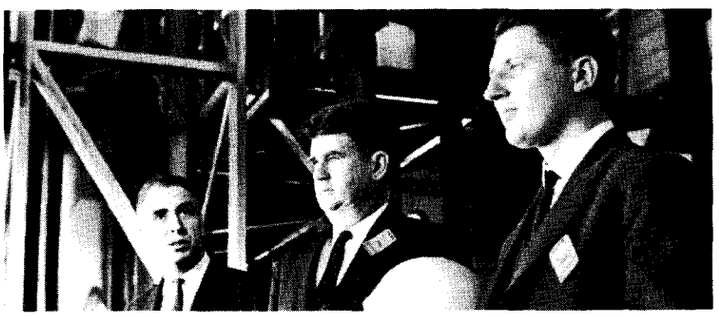
The information obtained from the telemetry is being studied, and the shot reportedly was successful on the basis of preliminary data.

The experiment was designed by the French National Center for Telecommunications (CNET).

Data from the first experiment will be compared with measurements made by a second Aerobee flight which was launched from Wallops last Thursday, Oct. 31, as the GODDARD NEWS went to press.

On the French side, the program is managed by a steering committee consisting of J. P. Causse (CNES) program director, L. R. O. Storey (CNET) scientific director and C. Fayard (CNET) technical director. For the experiment, Robert Clauvel (CNET) was project manager, assisted by G. Champonnois for instrumentation and D. Varloot for data reduction.

NASA activities in the cooperative program are being directed by Goddard. John T. Shea is the Goddard project manager and Samuel R. Stevens, Goddard project coordinator.



An example of Franco-American cooperation: FR-1 chiefs look over the Aerobee liquid fueling system before the launch of the first joint U.S.-French ionosphere experiment. From left—J. P. Causse, CNES satellite division head; John Shea, Goddard's FR-1 project manager; and C. Fayard, CNET techical director.

Goddard Speech and Paper Presentations

(Technical presentations approved as of October 28 for period of November 4 through November 17. Requests for copies of speeches and papers should be made directly to the author.)

PAPERS

J. T. Mengel, IEEE Northeast Electronics Research Engineering Meeting, Boston, Mass. November 4-6, ***"Satellite Ground Data Networks."***

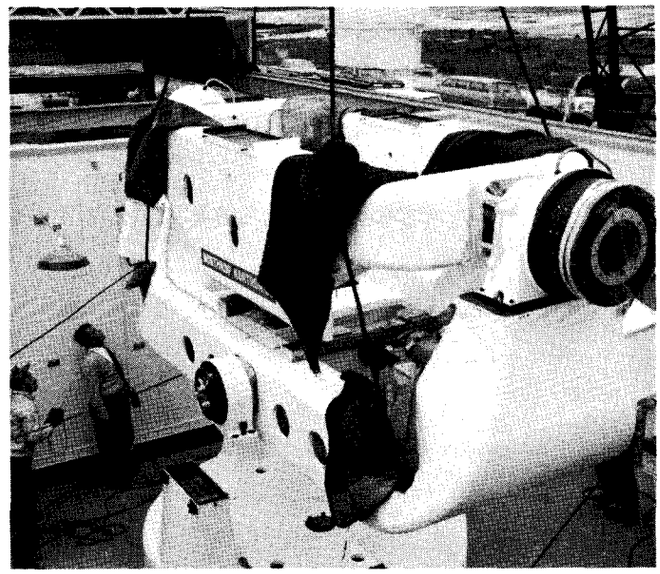
T. J. Hennigan, IEEE Northeast Electronics Research Engineering Meeting, Boston, Mass. November 4-6, ***"Recent Development in Primary and Secondary Electrochemical Batteries."***

Mark M. Koschmann and Robert W. Thurston and E. P. Greene, 1963 Fall Joint Computer Conference, Las Vegas, Nevada, November 12-14, ***"On-Line Computer Confidence and Diagnostic Procedure for the Real-Time Controls of the Orbiting Astronomical Observatory Series."***

SPEECHES

Eleanor C. Pressly, Federated Woman's Club, Petersburg, Virginia, November 5, ***"Sounding Rockets."***

Marjorie R. Townsend, Instrument Society of America, Rochester, New York, November 5-6, ***"Nimbus Spacecraft System."***



Telescope Mount Arrives

The mount for a large laser communications and electro-optic satellite tracking telescope arrived at Goddard's optical research facility on October 22. Built by the Nortronics Div. of Northrop Corp., the mount can operate in two different modes.

In one mode, its actions resemble those of a radio telescope, in the sense that its two axes, x and y lie in the horizontal north-south direction and in the east-west direction. In this action, the coordinates of points in the sky where the telescope is pointing are referred to these two axes. This manner will be the one most commonly used in future research on satellites.

In another mode, the actions of the axes resemble those of a normal astronomical telescope. In this case the y axis points to the north pole in the sky and pointing coordinates become astronomical.

According to Dr. H. H. Plotkin, head of the optical systems branch, "In future space communications, telescopes may play the role that antennas play in today's radio systems. Because the wavelengths of light are so much shorter, equivalent antenna gains are much higher; and the energy can be radiated into very tight beams. This results in a stringent requirement for mechanical pointing accuracy, and explains the very massive and careful construction of the telescope and mount."

The optical portion of the telescope will consist of a 24-inch reflector telescope presently being constructed by Fecker Div. of the American Optical Co. Delivery of the optical portion of the telescope is scheduled for early summer in 1964.

The optical system will be unique in that the telescope can be used either as a Baker Corrector telescope, as a Newtonian telescope, or as a Cassegrain telescope with a variety of effective focal lengths up to 2,500 inches. All components of the optical system are made of quartz glass to minimize thermal expansion problems.

The telescope proper will be used for testing various satellite communication and tracking techniques employing gas optical masers and ruby pulsed lasers. It will also be used to develop image-orthicon tracking techniques and other electro-optical techniques conceived in the future.

The electronics for governing the motions of the telescope are being constructed in-house at Goddard.

The mount, now in place on ARC property bordering Goddard, was constructed under the technical supervision of W. J. Carrion, associate head, optical systems branch and P. O. Minnott, optical engineer.

"Weight of the completed telescope will approximate 55,000 pounds," according to S. H. Genatt, station manager of the optical research facility.

Tired Old Tug Finds a Place on Space Team

An old seagoing tugboat with a picturesque name has made history in the space age.

Geronimo, a 20-year-old tug converted for oceanographic research recently teamed up with Goddard's Syncom II for the first transmission of oceanographic data via satellite.

Geronimo came into port last month after chugging from the scene of her historic participation off Africa's west coast at her top speed of 12 knots. She came into port in the nation's capitol, the home of her agency —the Dept. of Interior.

Scientists of the Dept. of the Interior's Bureau of Commercial Fisheries believe the joint efforts of these two unlikely partners, Geronimo and Syncom, will make an important contribution to future research into the secrets of the sea.

The data transmitted by Syncom concerned temperatures and salinity of water down to 3,000 feet in the Gulf of Guinea, Scientists aboard the Geronimo coded the data and transmitted it to NASA's station at Lagos, Nigeria.

NASA beamed the data to Syncom and the satellite relayed the coded information to Lakehurst, N.J. Then the data went by ground lines to the National Oceanographic Data Center (NODC) in Washington.

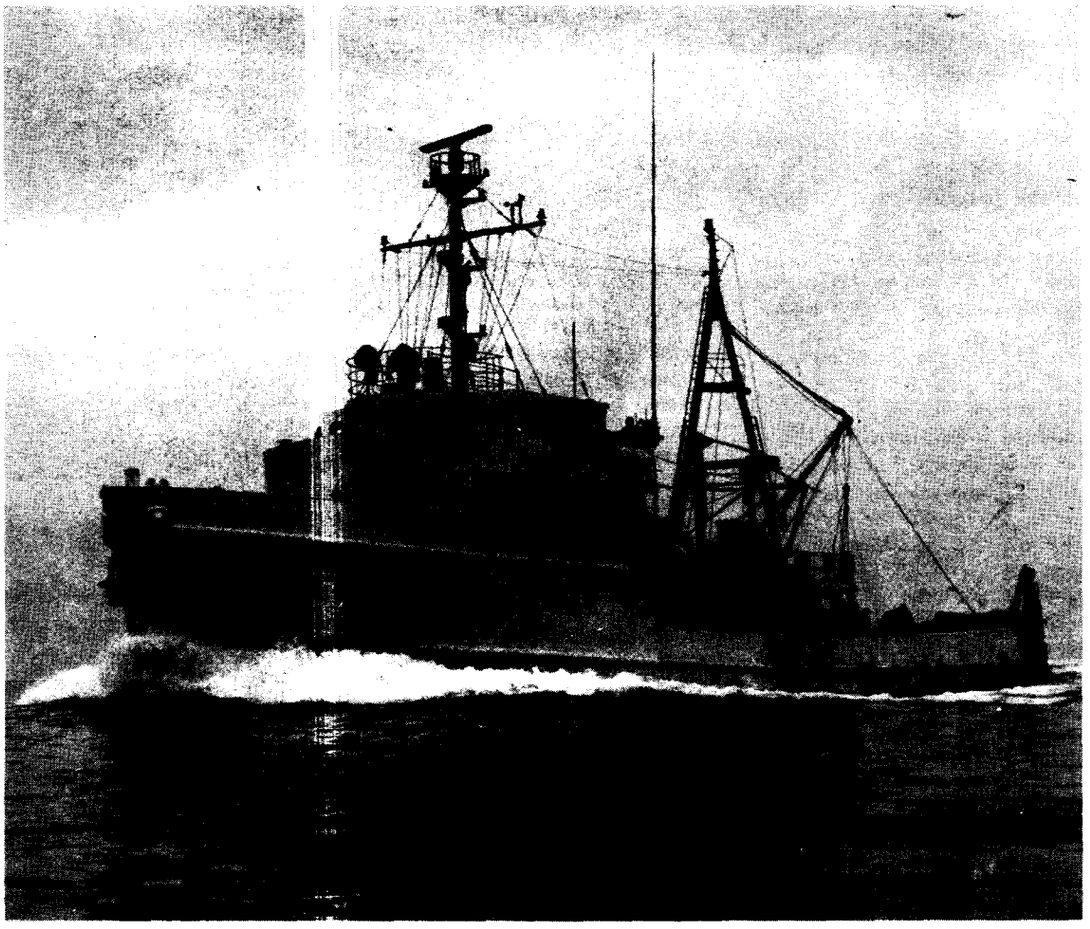
NODC computers compared the data with previously known information about the Gulf of Guinea. The computers confirmed that one of the Geronimo's instruments was malfunctioning—a condition already known to scientists aboard the vessel.

This and other information was routed back to the Geronimo both by satellite and conventional means. From Geronimo to Syncom to Washington to Geronimo—elapsed time less than 45 minutes.

Thomas S. Austin, Director of the Bureau of Commercial Fisheries Biological Laboratory at the Navy Yard Annex in Washington, explained the significance of the experiment.

"Under usual circumstances, the research vessel on station operates under a close schedule, and there is little time for quality control on the accuracy of instruments."

Austin recalled an incident in 1953, when a communications satellite would have been helpful. A study of data from a research vessel—after it had returned—showed that one of the major ocean currents in the Pacific strangely had disappeared. It would have been a rare opportunity for special research, but the vessel already was in home port when the fact was discovered.



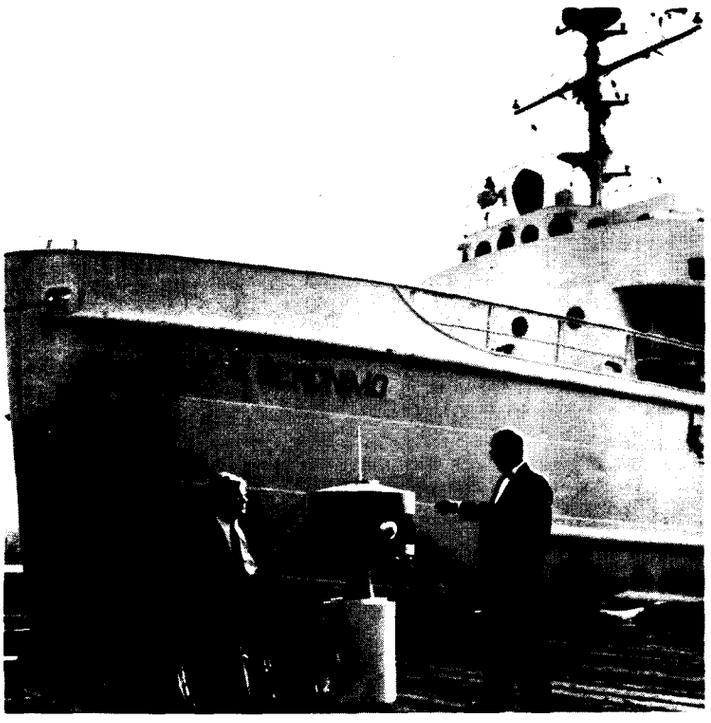
Here the Geronimo, a 20-year-old converted tugboat, moves at full speed (12 knots) toward an area under study by the National Oceanographic Data Center.

Helps Tiros Too

Geronimo also has been assisting in the Tiros weather satellite program to measure worldwide surface temperatures. Together with ten other research vessels from eight nations, Geronimo took surface temperature measurements in the South Atlantic for comparison with Tiros' findings.

The more accurate surface readings enabled space scientists to spot errors in the Tiros instruments and to make necessary corrections.

Thus an old tugboat finds a niche in the wide-ranging program to explore space—as a teammate to Tiros and Syncom.



Al Jones (right), head of the communications branch, is shown here explaining the operation of Syncom to Thomas S. Austin, Director, Bureau of Commercial Fisheries Biological Laboratory. Geronimo is docked in the background.