

GODDARD NEWS

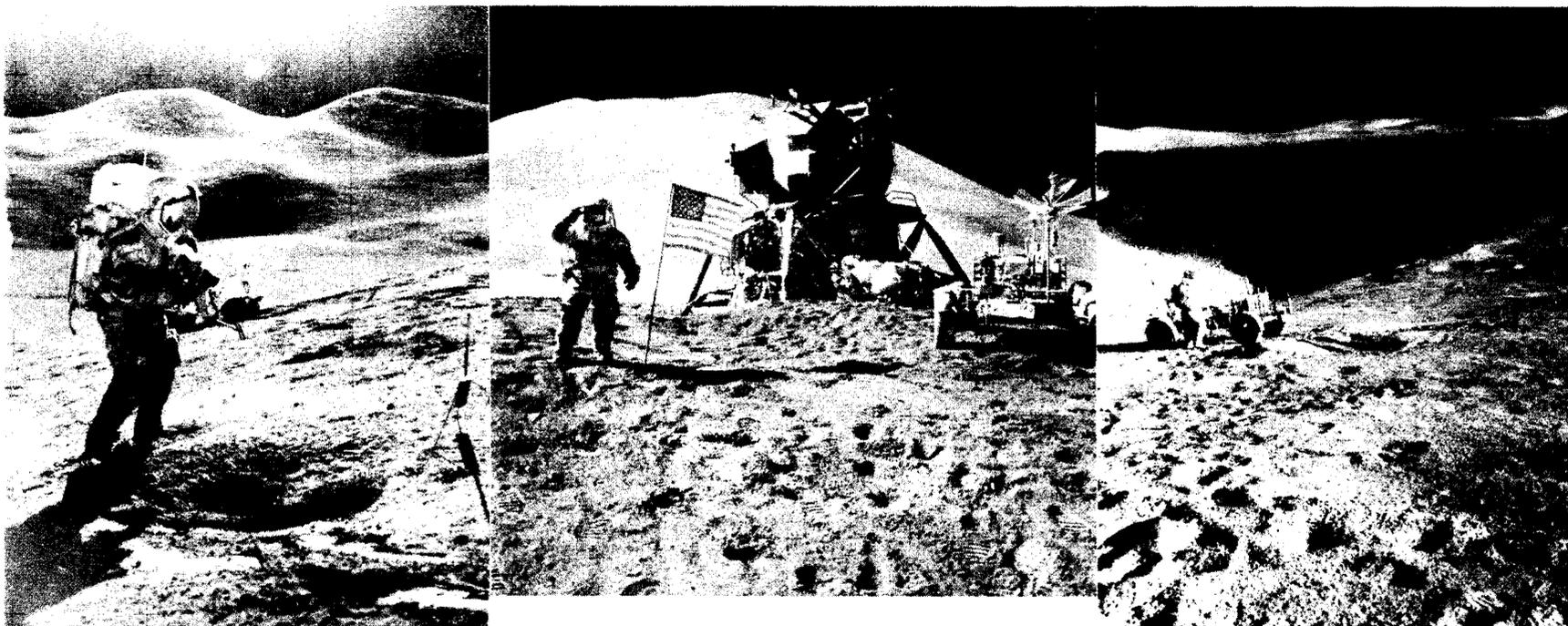
September, 1971

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HONEYSUCKLE CREEK tracks the Apollo 15 Lunar Module Falcon during the third period of Extra Vehicular Activity (EVA) on August 1. The Australian station is one of three prime sites in Goddard's Apollo network, along with Goldstone, California, and Madrid, Spain. During the mission, the 85-foot antennas at the prime stations provided nearly constant communications, telemetry and tracking contact with the astronauts, their spacecrafts and launch vehicle. Following the mission, they continue to receive data from experiments left on the lunar surface and to track the Particles and Fields Subsatellite that was ejected into lunar orbit shortly before the crew returned home. Additional support of the mission came from the 210-foot antennas at NASA's Deep Space Network station near Goldstone and the National Radio Astronomy Observatory at Parkes, Australia. All stations were linked together and to Goddard and the Houston Mission Control Center by the switching centers of the NASA Communications Network (NASCOM).

Apollo 15 on the Moon



APOLLO 15 COMMANDER David Scott uses a 70 mm. camera to photograph the lunar surface. The Apennine Mountains in the background are about 10.5 miles or 17.5 kilometers away to the east.

AT THE LANDING SITE Astronaut James Irwin salutes the flag. The Lunar Module is center, and the Rover is right. Looking south, Hadley Delta is seen in the background. St. George Crater is behind the rover and about five kilometers away. Apollo 15, the fourth mission to land on the Moon, left Earth July 26 and returned August 7 with some 171 pounds of moon rock and over a mile of film.

DAVID SCOTT stands near the Rover at the edge of the Hadley Rille. James Irwin took this picture during the first EVA from the flank of St. George Crater facing north along the rille.

Apollo Science Comes of Age

It was, in the words of Commander David Scott, "exploration at its greatest." Viewers back on Earth, who could see more of the mission than ever before—including the lunar lift-off—had to agree. As first of the new "J" missions, Apollo 15 was also the most scientifically competent moon landing to date. With equipment such as the Lunar Rover to expand their reach on the lunar surface and a new batch of experiments to be conducted from orbit, the geologically-trained crew of Apollo 15 gave the world a sample of how lunar exploration should be done.

The Lunar Module Falcon landed July 30 near the meandering canyon called Hadley Rille and some ten miles away from the 15,000 foot-high Appenine Mountains. Before it took off again on August 2, crewmen David Scott and James Irwin had travelled over 17 spectacular miles and clocked over 18 hours of Extra Vehicular Activity (EVA). During three extended periods of EVA, they gathered 171 pounds of moon rocks and soil samples, thoroughly photographed the surface and terrain, and set up nine scientific experiments—seven of them a part of the third Apollo Lunar Surface Experiments Package (ALSEP).

SIM Bay Experiments

While Scott and Irwin travelled the Moon's surface, Command Module Pilot Alfred Worden kept busy conducting a series of scientific investigations from lunar orbit. Most of these involved eight experiments carried for the first time in the new Scientific Instrument Module (SIM) Bay, a section of the Service Module.

One of these new experiments is the X-Ray Fluorescence Spectrometer designed by Principal Investigator Dr. Isidore Adler and Co-Investigator Dr. Jacob Trombka, both of Goddard's Theoretical Studies Branch. This spectrometer measured the composition of the sun-lit lunar surface by detecting X-ray fluorescence caused by solar X-ray interaction with the Moon.

"The experiment," says Dr. Adler, "worked well and yielded over 100 hours of good data. We are presently conducting preliminary studies based on quick-look data, as the actual detailed data tapes have not yet arrived.

"Based on this quick-look data, we've been able to plot compositional variations along selected ground tracks including a substantial part of the lunar backside. We've already learned that aluminum/silicon ratios are high on the lunar backside, eastern limb, and highlands compared to the mare areas. This is an important finding and agrees well with the point of view that the highlands are mainly feldspathic. The highlands close to the Mare Imbrium have lower Al/Si ratios which is again in accord with the picture of a large ejecta blanket associated with the Imbrium and Serenitatis. This may in fact be characteristic of the sub-crustal material.

"There is also a wealth of additional data to be processed such as the synoptic variation of the sun's X-ray output and the X-ray astronomical data obtained during the Trans-Earth Coast."

Dr. Trombka, Dr. Adler's Co-Investigator is also Co-Investigator for the Gamma-Ray Spectrometer and Alpha-Particle Spectrometer SIM Bay experiments.



SIM BAY SECTION of the Command/Service Module photographed from the Lunar Module.



GODDARD INVESTIGATORS for the Apollo X-Ray Fluorescence Spectrometer are (standing, from left) Richard Schmadebeck, Project Engineer; Dr. Jacob Trombka, Co-investigator; Evan Eller, physicist; Dr. Isidore Adler, Principal Investigator; and (seated) Jesse Gerard, a Research Associate from the National Academy of Science.

Donnelly New NASA PAO Chief

JOHN P. DONNELLY, Vice President for Corporate Communications of the Whittaker Corporation in Los Angeles, was appointed NASA Assistant Administrator for Public Affairs, last month. He is responsible for the development and direction of NASA's public affairs activities including public information, public services, and educational programs. Donnelly, who graduated from Long Island University with a B.A. in Journalism in 1958 after military service in the U.S. Navy, is married and has five children.



Delta Symposium

October 13, 1971

'Delta In the 1970's'

The Delta Project is sponsoring a one day symposium here on October 13, to introduce its new series of Delta "Straight Eight" launch vehicles. Representatives from NASA, other government agencies, U.S. aerospace industry and foreign governments will attend. The Honorable Joseph E. Karth, Congressman from Minnesota, member of the House Committee for Science and Astronautics, and Chairman of the sub-committee for Space Science and Applications, will keynote the morning session. Dr. John E. Naugle, NASA Associate Administrator for the Office of Space Science and Applications, will outline the prospectus of NASA missions in the 1970's. W. R. Schindler, C. R. Gunn and R. J. Goss of the Delta Project Office will present detailed information relative to the new vehicle changes, their influence on spacecraft design, and vehicle/spacecraft integration philosophy. The afternoon session will be devoted to workshops in the areas of mission analysis, launch vehicle imposed design restraints, spacecraft/launch vehicle integration, and secondary payload capability and philosophy.

An evening social is also planned. The Honorable James W. Symington, Congressman from Missouri and member of the House Committee for Science and Astronautics, will be the after dinner speaker.

All GSFC personnel are invited to attend. Further details will be posted in the Goddard Dateline. Questions regarding the symposium can be directed to R. J. Goss, x-2272.

Save Natural Resources

You've heard it all before—"Turning off excess lights and electrical equipment saves money." Add to this that such measures also save electricity and the natural resources used to produce it, and you have the emphasis of a new campaign at Goddard.

This "Utilities Conservation Program" is aimed at conserving electrical power, fuel oil, natural gas and water resources. With the help of every Goddard employee we can minimize the use of electrical power to help prevent blackouts and brownouts during peak use periods, help guarantee an adequate area water supply at all times, and help preserve limited supplies of fossil fuels such as oil and natural gas so that future generations may have their share.

How can everyone do his or her part? We can all put into effect common sense practices that are sound both economically and ecologically. For example, a single exterior door left open can cost the Center eight dollars a day in terms of cool air lost in summer and heat lost in winter. That's 32½ cents an hour that can be saved by closing a door.

Drawing the blinds on the solar side of a building not only makes you feel more comfortable, it cuts up to 50% of the heat that would otherwise reach your office. Since ordinary window glass transmits most of the sun's radiant energy and heat from outside air, drawing your blinds can greatly reduce the load on Goddard's air-conditioning equipment.

Be sure washroom faucets are all the way off after use and report all leaks. A drip of one drop per second adds up to about 650 gallons of water per year.

Some other do's and don'ts that conservation-minded employees can remember are:

- *Don't* leave unused electric typewriters, lights, coffeepots and other office equipment turned on.
- *Do* turn off all shop and laboratory equipment when not in use.
- *Do* keep an eye open for problems and report them to Patricia Pickrel on the emergency phone, Ext. 5555. This includes reporting all malfunctions of utility systems such as water, gas and oil leaks; all inoperable door-closers; and all broken windows, doors and venetian blinds.
- *Do* send all suggestions for making the campaign a success to Malcolm J. Tarlton, Goddard Utilities Conservation Manager, Code 293, or call him on Ext. 4640.



PATRICIA PICKERAL answers the emergency phone, Ext. 5555, to take down all reports on malfunctioning utility systems on Center. At right is her boss, Malcolm Tarlton, Goddard Utilities Conservation Manager.



LABOR DAY. The 1971 Goddard Queen Teresa Ricketts (center) and her court, Susan Elliott (left) and Kathy Brahm Schiek, were in the annual Greenbelt Labor Day Parade on September 6, 1971. They are shown in the convertible owned and driven by Goddard's Tom Canning. The parade was very large and exciting for everyone including our Goddard representatives.

Cyclemates Visit Goddard

Tanned, tired, 64 flats, and 4000 miles after leaving their homes in Washington state, Cyclemates II hit Goddard on August 10. The fifteen boys and girls from a Mercer Island junior high history class and their teacher/leader Miss Frances Call had just spent 59 days bicycling across the United States.

The journey was of particular importance to William Slayton, Head of the Documentation Services Section, because his nephew Brent Larson was one of the cyclists. Brent and the others in his group agreed that their reception by President Nixon at the White House and coverage on nation-wide television were the highpoints of their visit to the D. C. area.

The Cyclemates camped most of the way across the country, but were sometimes fortunate enough to be housed by churches along the way. Carrying no food—only essential clothing, tools, sleeping bags and tents—Cyclemates II averaged 80-90 miles per day. They would bike for several hours after rising at 7:30, stop for a 1½-hour lunch break, and continue on until 5 p.m. Their trip took them across northern America, through mountain passes and the badlands of South Dakota. Before leaving home, they got in shape by taking 60-mile practice runs during weekends.

After arriving at their east coast destination, the Washington Monument, the Cyclemates shipped their bikes home and continued by train to New York, Canada, and finally Mercer Island.



CYCLEMATES II. Cyclists who made the 3,671-mile cross-country trip are (back row, from left) Randy Parker, Brent Larson, Alison Johnston, Mary Pagel, Chris Simpson, Peter Gnehm, George Goodstein, John Stuckey, and (front row) Elaine Bracken, John Mudge, Hanne Peterson, Sue Hall, group leader Miss Frances Call, Kevin Lamb, Maiko Blow and D. R. Hendel. At right William Slayton and his bicycling nephew Brent Larson stand with Cyclemates II leader, Frances Call.



Scuba Club Outings

Members of the Goddard Scuba Club tried their skills in spearfishing and underwater exploration during two excursions in July. Both trips were made aboard the "Addie Mae" captained by Bob Byre out of the Indian River Inlet in Delaware.

On the Fourth of July, 12 divers set out for Fenwick Shoals, which is approximately 11 miles south and six miles east of the Indian River Inlet. At a depth of 35 feet, wreckage lies scattered about providing excellent cover for tau togs and sea bass—a spearfisherman's paradise. Scuba Club members on this trip were: Dave Beyler, Ken Davidson, Carl Salas, Larry Line, Betsy Corwin, Chuck Harris, Ron Miller, Jerry McCoy, Glenn Salas, and Jeff McCoy.

On July 24, the Goddard Scuba Club, the Atlantis Rangers and the Maryland Academy of Scuba Diving set out in perfect weather for the wreck of the "Washingtonian" 12 miles off the Delaware coast in 90 feet of water. The 400 foot long "Washingtonian", built in 1914, was the most advanced freighter of its time complete with refrigeration holds. It sank in 1915 after a collision with the wooden-hulled, five masted schooner "Elizabeth Palmer", which also sank at an unknown site nearby.

Everyone made two dives onto the wreck. Despite the poor underwater visibility of 10 feet, lots of fish were seen and two lobsters were brought back for the pot. Goddard club members along were: Larry Line, Dave Mengers, Nick Shaf, Gay Hilton, and Tom Ratliff.

The Goddard Scuba Club now boasts 45 members and is headed up by President Larry Line (Ext. 5465). Vice President is Jay Betts, and Secretary-Treasurer is Linda Cox.

Goddard Scientific Colloquia

Goddard's 1971 fall Scientific Colloquia series will begin Friday, September 17 with a lecture by Dr. Wernher von Braun, NASA Deputy Associate Administrator. All colloquia will be held at 4:00 p.m. in the Building 3 Auditorium. Coffee will be served in the Lobby beginning at 3:30 p.m.

Sept. 17 — **Dr. Wernher von Braun**
Deputy Associate Administrator
National Aeronautics and Space Administration
Washington, D.C.

THE SCIENTIFIC OBJECTIVES OF THE SKYLAB AND SPACE SHUTTLE PROGRAMS

Sept. 24 — **Professor R. Grant Athay**
High Altitude Observatory
University of Colorado
Boulder, Colorado

RECENT DEVELOPMENTS IN SOLAR ATMOSPHERIC PHYSICS

Oct. 1 — **Professor Mark Kac**
Department of Mathematics
Rockefeller University
New York, New York

THE NATURE OF STATISTICAL THINKING

Oct. 8 — **Dr. Edwin Kessler III**
Director, National Severe Storms Laboratory
National Oceanic and Atmospheric Administration
Norman, Oklahoma

SEVERE STORMS



PAST PRESIDENTS of the Goddard Women's Club are (from left, sitting) Bett Hoff, Lois Schroeder, and Margaret Callaghan. Standing are Kay Kniffen, Pat Burdick, Kay Butler and Ellen Stolarik. Not shown are Elaine Fowler and Fran Crawford.

Women's Club Begins New Year

The Goddard Women's Club will hold its first meeting of the season on September 22 at 8:00 p.m. in the Building 1 Cafeteria. There will be a demonstration of the styling and care of wigs by a representative of Bianto's Hairstylists, displays by club interest groups, and refreshments.

All wives of Goddard personnel and female employees at the Center are eligible for membership in the Women's Club. All are cordially invited to the meeting.

The next event on the club's calendar is a fashion show/luncheon to be held on October 20 at the Sheraton Motor Inn in New Carrollton. The luncheon will begin at noon with the cash bar open at 11:30 a.m.

Other plans in the making for this year include a stretch and sew demonstration, a Christmas party, an old-fashioned hayride, and a "Day at the Races" at Bowie Racetrack.

Goddard Women's Club Officers for 1971-72

President	Myrtle Duck	552-2238
First Vice President	Peggy Rochelle	622-0927
Second Vice President	Janet Barclay	262-1448
Treasurer	Dorothy Osler	434-7186
Recording Secretary	Lois Slayton	WA7-3531
Corresponding Secretaries	Robby Smith	464-0783
	Ellen Cygnarowicz	459-5871
Counselors	Bett Hoff	577-1508
	Betty Mills	384-4119
	Maria Vonbun	622-1294
Nominating Committee — Chairman —	Chris Maskaleris	449-6356
	Polly Covington	577-4185
	Fran Winston	423-0372
	Brenda Cooley	345-1388
	Joan Borchers	577-4243
	Eleanor Bell	577-2293
Refreshments	Saroja Balasubrahmanyam	577-8312
Membership	Dorothy Aikins	935-5540
Hospitality	Doris Bickford	577-2221
Decorations		

MYRTLE DUCK (left), Goddard Women's Club President for 1971-72, receives the gavel from past President Bett Hoff.

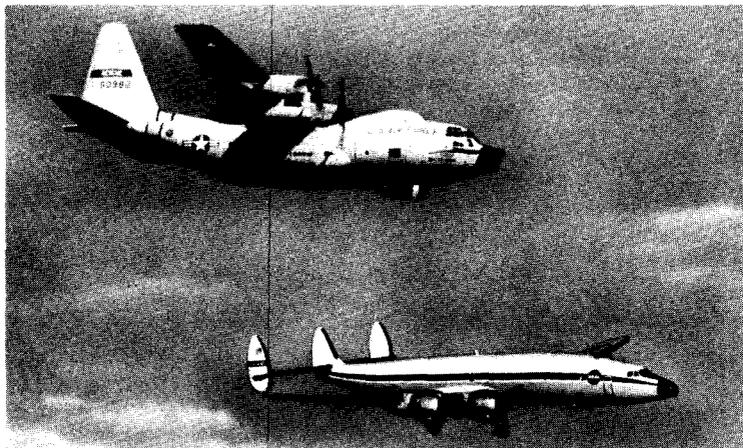


Credit Union "Grand Opening"



DR. JOHN F. CLARK, Goddard Director, cuts the ribbon to officially open the Credit Union's new office located behind the cafeteria in Building 21. With him for the special occasion on August 26 were (from left) Susan Elliott, Edward McCutchen, Secretary of the Credit Union Board of Directors; Wilfred F. Mitchell, President of the Credit Union Board of Directors; Robert Moorman, Managing Director of the D.C. League; Leonard Rawicz of the Credit Union Board of Directors; Albert A. Clagett, Director of the Administrative Services Division at NASA Headquarters and Cathy Schiek.

Apollo Pre-Mission Aircraft Tests



GODDARD'S LOCKHEED CONSTELLATION, NASA-421, is equipped to imitate the Apollo spacecraft by radiating S-band and recovery beacon frequencies. The Air Force Lockheed C-130 tracks these frequencies and is prime in the recovery of the Apollo spacecraft after parachute deployment. The above picture was made last June when the NASA-421 provided training for the Hawaii 76th Air Rescue and Recovery Squadron and the 79th ARRSQ from Guam. Major Sakamoto of the 76th was aboard the C-130 during the exercises 600 miles west of Hawaii. Dennis E. Maddy, of Goddard's Network Simulations Branch, conducted the exercises from the NASA-421.

AIRCRAFT SIMULATION tests for Goddard's Apollo tracking stations were also a key pre-mission responsibility of the NASA-421. Here Evan Gull (left), NASA-421 Simulation Team Director, watches activity in the Honeysuckle Creek operations area during simulations at the Australian station last June. At the operations console is Ian Grant, Assistant Station Director, and Mike Evenett, USB Engineer. Operations Assistant Len Litherland (right) looks on.



Aerospace Education Conference At Kennedy Space Center

Two hundred sixty teachers, curriculum specialists, educational administrators, Civil Air Patrol members and other persons interested in education from the northeastern states attended a conference at the Kennedy Space Center on July 23 to 26, and viewed the launch of Apollo 15. The three-day experience was the result of planning and implementation by Dr. Russell Rickert, Dean of Science and Mathematics at West Chester State College in West Chester, Pennsylvania; and Mr. Warren Williams, Science Coordinator of the Abington Pennsylvania School District. They began planning this program during the Apollo 14 mission. The conference received no funding from any organization. However, they did obtain assistance from many people and organizations.

The Goddard Space Flight Center assisted in obtaining passes to the Parkway Viewing Site for the launch and developed the program of lectures and seminar sessions conducted by Goddard scientists. The Civil Air Patrol through the Pennsylvania wing, transported 140 participants in two airplanes round trip between Philadelphia and Orlando. Seventy participants combined attendance at the conference with a trip to the Virgin Islands where they spent several days in an oceanology program. These activities concluded a six-week course in Environment and Ecology directed by Mr. Williams. The remaining participants arranged their own travel itineraries.

Motel accommodations, commercial ground transportation for two visits to the Kennedy Space Center and a myriad of smaller details were all coordinated and implemented by Dr. Rickert and Mr. Williams. At the completion of the conference, they were exhausted but rewarded by the realization that their efforts had enabled a very large group of education "action makers" to have such an extraordinary experience. They are convinced that this experience for the participants will have positive results in hundreds of classrooms throughout the northeast this fall. These two gentlemen have the conviction that the teachers of our children should be the first to experience and feel the accomplishments of man and his technology.

Goddard Team Discusses the How's and Why's of Lunar Exploration

Fortunate circumstances allowed the educators to learn about space exploration, technology and management from a select faculty from Goddard. Dr. Theodore Northrop who spoke on "Plasmas" took time out from a family vacation trip to participate. Dr. Isidore Adler, Dr. Jacob Trombka and Richard Schmadebeck were at the Cape in conjunction with their Geochemical Mapping from Lunar Orbit experiments on Apollo 15 and were able to take time out to explain their research to the participants.

Dr. Bevan French placed the Apollo 15 mission in perspective through two presentations titled: "Origin of the Moon: New Data From Old Rocks" and "The Apollo 15 Landing Site: Why Go to Hadley Rille."

Dr. Michael J. Vaccaro tied it all together in the Sunday evening banquet where he discussed the educational implications of space exploration and posed challenges to educators of the 1970's.

The six bus loads of participants were sleepy but anxious to leave their Orlando motel at 6:00 AM on Monday, July 26, to view the launch of Apollo 15.

They departed Florida on Monday afternoon tired but elated with the feeling that they had not only witnessed an historical event but had gained sufficient knowledge through the conference to understand its significance.

Teacher About the Sp



R. LYNN BONDURANT, Educational Programs Office workshop instructor, explains the operation of the GSFC planetarium projector to a Pennsylvania science teacher during a workshop session in astronomy.



ROBERT KELLY, Special Programs Office, describes the NASA Tracking Network to teachers and their families from Hershey, Pennsylvania.

HERBERT BLODGET, Planetology Branch, discussed the "Geological Applications of Orbital Photography" with educators from Hershey, Pennsylvania. During the summer, Goddard's Educational Programs Office hosted ten groups of visiting educators for full day programs.



Teachers from schools in seven states participated this past summer in Aerospace Science Education Workshops supported by Goddard's Educational Programs Office (EPO).

A group of thirty educators from Pennsylvania's Washington, Fayette, and Greene counties began the EPO summer schedule by spending five days at Goddard in a program designed for secondary science teachers. Lectures were presented by Harry Press, Associate Director of Projects; Dr. Louis Walter, Head, Planetology Branch; John Sissala, Nimbus-ATS Data Utilization Center; Locke Stuart, Special Programs Office; Dr. Paul Lowman, Planetology Branch; Dr. Jaylee Mead, Theoretical Studies Branch; and Dr. Joseph Lundholm, NASA Headquarters.

Other highlights of the group's visit included a "star party" arranged by the Goddard Astronomy Club, workshop sessions conducted by EPO staff members and special laboratory visits hosted by Dr. Walter; Dr. Warren Hovis, Earth Observation Branch; and D. Wiley Jenkins, Fabrication Division. Featured speaker at the dinner meeting was Dr. Enrico Mercanti, Project Manager, Orbiting Geophysical Observatory. His topic was "Ecological Activities in the 70's."

The workshop conducted at Glassboro State College, Glassboro, New Jersey, and directed by Dr. V. Eugene Vivian combined Aerospace Science Education and the study of Conservation and the Environment. The total program lasted six weeks, with the first two weeks' sessions conducted by Goddard's Educational Programs Office instructional staff.

Alfred Smeraglio, Coordinator of Science, District Eight, Philadelphia, Pennsylvania, chose to combine his group's studies of aerospace science with two additional weeks of curriculum study to devise ways to enrich the district's science program with space related materials. The District Eight group joined other northeastern area educators in attending a special conference at Cape Kennedy, Florida, held in conjunction with the launch of Apollo 15.

1971 SUMMER AEROSPACE

Institute for Aerospace Science Education - for teachers in Washington, Fayette and Greene Counties, Pennsylvania, conducted at Goddard Space Flight Center, June 21-25.

Space Science Section of the Environmental Education Program, Glassboro State College, Glassboro, New Jersey, June 21-July 2.

1971 Workshop for Aerospace and Elementary Science Education, Philadelphia District 8 Schools and West Chester State College, West Chester, Pennsylvania, June 28-July 30.

1971 Aerospace Workshop for Science Education, Eastchester, New York, Public Schools and University of Hartford, June 28-July 12.

Summer Session Seminar in Aerospace Education, Herbert H. Lehman College of the City University of New York, July 13-16.

1971 Aerospace Institute for Science Education, Seton Hall University, South Orange, New Jersey, June 28-July 16.

s Learn ace Program

Aerospace Institutes at C.W. Post Center, Brookville, New York, and Seton Hall University, South Orange, New Jersey, utilized NASA workshop sessions to compliment presentations by aerospace industry representatives and those from aviation education organizations. The teachers at Seton Hall and C.W. Post visited the Lunar Module Assembly Area at Grumman Aerospace Corporation and toured local aviation installations and air traffic control centers. An unexpected highlight of the Seton Hall workshop was an "egg drop" from an Air Force helicopter. The "egg drop" experiment is an assignment given the teachers in which they package a raw egg in a small container in such a manner that it can withstand high impact "g" forces.

A multi-unit workshop was conducted at Chestnut Hill College, Philadelphia, Pennsylvania, for 90 nuns and lay teachers. Participants came from five states and 27 school systems to participate in activities such as a rocket launch, an evening sky observation session, a flight in a small airplane, a space food luncheon and other space related science sessions. Stamford, Connecticut; and Lehman College, Bronx, New York, featured workshop sessions in Astronomy, Aeronautics, Living in Space, Meteorology, Earth Resources and Rocketry.

It is the hope of Goddard's Educational Programs Office that all the educators who participated in the 1971 summer programs share in the following thoughts expressed by Rev. Msgr. Thomas G. Fahy, President, Seton Hall University—"As educators we cannot be indifferent, or mere spectators while aerospace technology reaches farther into the heavens. Our children will not let us. Their need to know is part of the human spirit and must not be frustrated. The moon, the stars, the vast reaches of outer space which for centuries were the domain of astrologers and dreamers, now are moving within the orbit of modern technology. New concepts in the fields of physics, chemistry and life sciences are rapidly unfolding. This fact accentuates one of the pressing, inescapable needs of Space Age Education. All curricula must reflect this realization."

EDUCATION WORKSHOPS

1971 Aerospace Workshop for Science Education, Stamford, Connecticut, Board of Education, July 12-26.

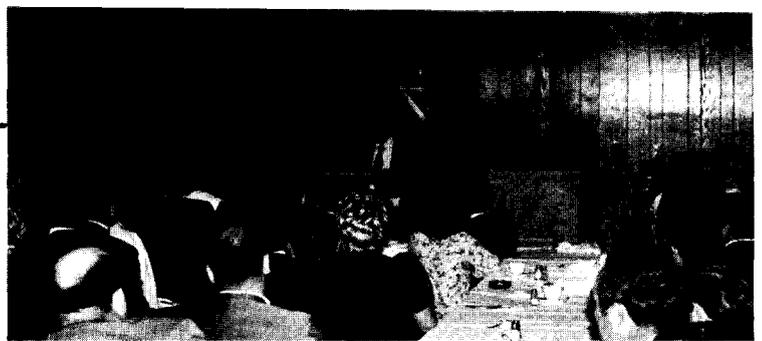
Chestnut Hill Eastern Regional Aerospace Science Education Workshop, Chestnut Hill College, Philadelphia, Pennsylvania, July 26-August 6.

Aerospace Workshop, Towson State College, Towson, Maryland, July 29-August 6.

Aerospace Science Workshop for Elementary, Junior and Senior High School Teachers, C. W. Post Center of Long Island University, New York, August 9-27.

Aerospace Workshop, Temple University, Philadelphia, Pennsylvania, August 9-13.

Aerospace Workshop, Derry Township, Pennsylvania, and Millersville State College, Millersville, Pennsylvania, August 16-27.



GUEST SPEAKER at the Pennsylvania Area "C" Institute dinner meeting was Dr. Enrico Mercanti, OGO Project Manager.



DR. WARREN HOVIS, Earth Observations Branch (second from left) listens to a question on infrared photography from a Pennsylvania Area "C" teacher. The teachers spent a full day in the branch laboratories with Dr. Hovis and his staff.



TEACHERS attending the C.W. Post Center workshop in Brookville, New York, investigate the heat absorbing characteristics of a soil and a water sample. This was one activity designed to acquaint the teachers with the principles being used by NASA to study earth resources from satellites.

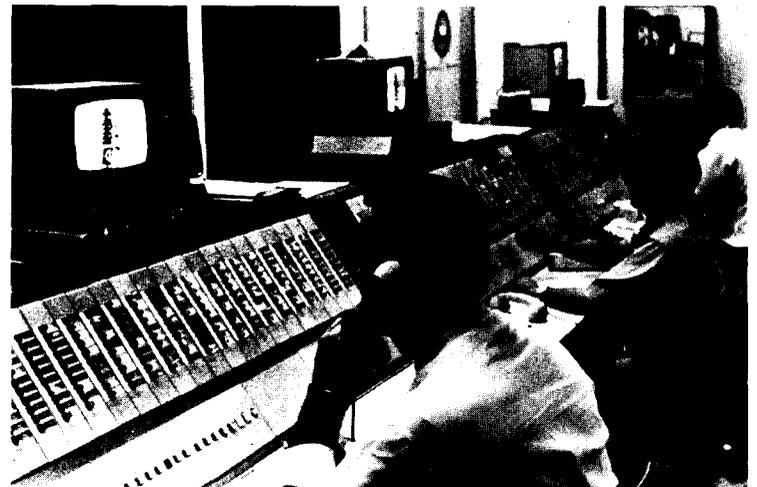
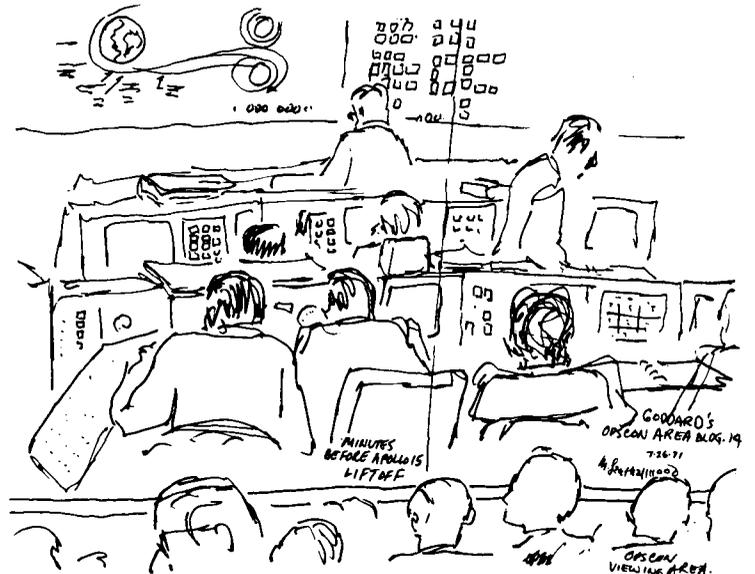
A TEAM OF TEACHERS from Temple University paste together sections of a weather mosaic made up of satellite photographs.



Apollo 15 at Goddard Artist's and Camera Eye View



OPERATIONS CONTROL CENTER.



NASCOM/SCAMA (from left), Don Stone, Tony Giantonio and Skip McMurdy at the Central Voice Control Console



NETWORK SUPPORT TEAM.





REAL TIME COMPUTER AREA during Apollo 15 launch.



HONOREES at the VIP reception. Standing (from left) are Theodore M. Rager, Bendix Field Engineering Corp; James Gregg, host; Mrs. Gregg, guest; Donald Thomas, Bendix; Mrs. Thomas, guest; Mrs. Stoehr, guest; Dick Stoehr, guest; Mrs. Eason, AT&T Co.; Dr. Clark, Goddard Director; Howard K. Ottenstein, Manpower Utilization Div.; Donald L. Schmittling, Associate Chief, NASA Communications Div.; Charles E. Somerville, RCA Globecom; Mrs. Eloise Tarter, Networks Directorate; Miss Darlene Fleshman, Network Computing Div.; Robert Owen, Chief, Network Engineering Div.; Mrs. Sharon Savia, Network Engineering Div.; Dawson E. Segar, Univac; James W. Sperry, Program Methods, Inc.; and Tecwyn Roberts, Assoc., Director for Networks Systems. Kneeling are Turner N. Wiley, host; Louis S. Bayus, Bendix; Mr. Eason, guest; Mr. William E. Barker, Military Sealift Command; and James F. Guilfoyle, Networks Oper. Div.



JOHN GOAD in the NASCOM Central Teletype Complex



GSFC Honorees at Cape Kennedy

Chosen by their immediate supervisors for outstanding performances in the Apollo Program, thirteen members of Goddard's Govt/Industry Team were honored at a series of activities highlighted by a viewing of the launch of Apollo 15 at Cape Kennedy.

Jack Dowling, Director of the MILA USB Tracking Station, made arrangements for a special platform at the MILA Site from which the group received an excellent view of the spectacular lift-off of the giant Saturn V. To further enhance this experience, a specially equipped air-conditioned trailer was provided with both commercial and in-house TV screens and speakers for two of the Network voice circuits for complete coverage of the critical initial phases of the mission.

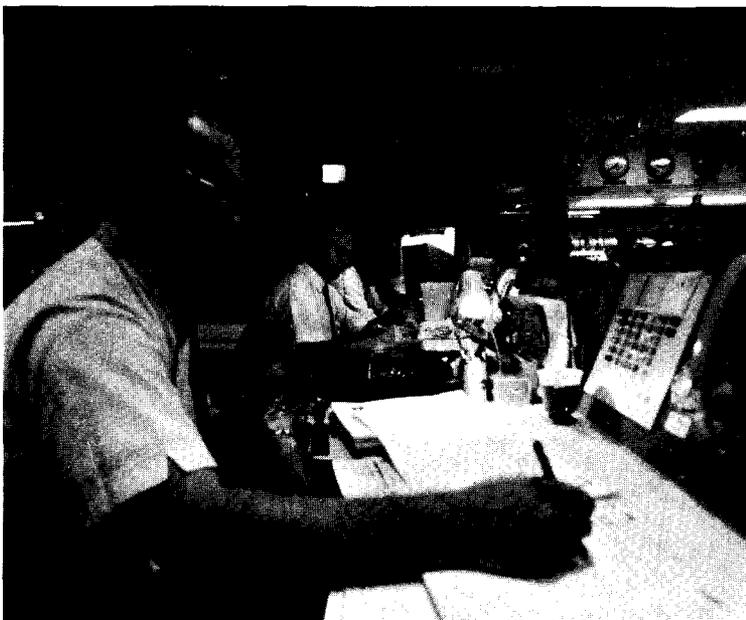
The highlight of the trip for some Honorees was the VIP Reception held in the Convention Hall of the Sheraton Cape Colony Inn and arranged especially in their honor. This affair was attended by many dignitaries and a host of astronauts. Among these were Dr. George Low, NASA's Deputy Administrator; and Dale Myers, NASA Associate Administrator for Manned Flight; Dr. John F. Clark, Goddard Director, Tecwyn Roberts, Goddard Associate Director for Network Systems, and Robert L. Owen, Chief of Goddard's Network Engineering Division. Mr. L. J. Carter, Secretary of the British Interplanetary Society from London also made an appearance. Thirteen astronauts dropped in, including Al Shepard (Apollo 14), Stu Roosa (Apollo 14), John Swigert (Apollo 13), Fred Haise (Apollo 13), Don Holmquist (Skylab) and Joe Allen, Scientist/Astronaut (Capcom for the Apollo 15 mission). Pinch hitting as stand-ins for their astronaut husbands, Mrs. Karl G. Henize and Mrs. James Irwin.

To round out the event-packed three-day visit, the Honorees participated in a tour of the KSC and AFETR Facilities, a detailed inspection of the USB Tracking Station and a briefing on the operation of the Press Center, with our own Ed Mason doing the commentary.

Manned Flight Awareness is a broad reaching program designed to develop a strong government/industry team spirit and to instill in each individual associated with manned flight activities a sense of personal involvement and responsibility for the lives of the astronauts and fellow employees and for the safety and integrity of space hardware. Awards such as a visit to Cape Kennedy are given to recognize superior work performed by an individual in the accomplishment of his Apollo tasks.



CADFISS DIRECTOR Walt Adams (seated) and Herb Flowers.



NASCOM Communication Managers (from left) Mike Nitka, Dick McAvoy and Jimmie Elswick

Students as Biomedical Engineers

In a program designed to link Goddard with the medical community, engineering and pre-med students worked here to use NASA technology in developing devices for hospital use and to gain research experience. The third Summer Institute in Biomedical Engineering was set up in conjunction with George Washington University and, according to program coordinator Wayne Chen, has been a "distinct success". In ten weeks, all five two-member teams came up with concrete results that can be applied to medical and/or industrial problems.

A remote muscle controller is one of the more impressive results of the institute. Teammates David Haines and Robert Martino developed a prototype device for use by brain-damaged patients who have lost the control of good arm muscles. They set up a system that utilizes the energy from a controllable muscle to move an isolated one. Some patients might be able to use the device to re-train undamaged portions of the brain to take over the lost control. Also, the apparatus could eventually be adapted for use with other parts of the body.

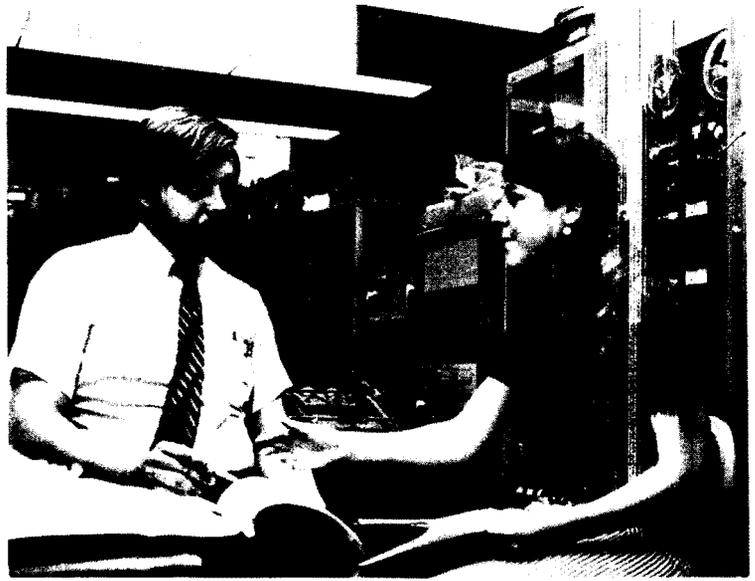
Robert Fealey and William Renner worked on rapidly detecting bacterial presence in a given fluid sample. As impressive as the muscle controller, their prototype device can give a yes-no answer to the question of bacterial presence exceeding a set limit. Other comparable techniques are much more costly or require as much as 24-48 hours for completion. Theirs takes between ½ and 2½ hours. Originally designed for hospital use, the detector may be especially valuable to the dairy industry by providing cheaper and more reliable information concerning bacteria in liquid milk products.

Remote intensive care terminals were the subject of study for Stephanie Dier and Edward King. In their work, they studied the evolution and structure of the intensive care unit at George Washington Hospital. They pinpointed flaws in existing units and, from that, were able to logically design a more economic, more useful system.

George Greene and Martin Raftenberg, the fourth institute team, were involved in the study of the relationship between blood flow to various organs and the organs' response to therapy. To do this, they designed a new thermal dilution technique. While existing techniques rely on injections into the bloodstream coupled with continual monitoring their prototype apparatus is able to electronically measure the rate of blood flow.

The remaining project in the program, carried out by Donald Gorelick and Chung Kim, concerned the improvement of transducers that obtain permanent records of the functioning status of major arteries. Their final device is less complicated, less costly, and avoids the pulse wave shape distortion of presently available commercial transducers.

Goddard Advisors for the 1971 Summer Institute in Biomedical Engineering are Joseph Silverman of the Earth Observations Systems and Systems Engineering Division, Edward Devine of the Mechanical Division, Leonard Kleinberg of the Communications and Navigator Division, Lawrence Kobren of the Engineering Physics Division, and Emmett Chappelle of the Laboratory for Extraterrestrial Physics.



EDWARD KING and Stephanie Dier designed an improved remote terminal for use in hospital intensive care units as their project in the 1971 Summer Institute in Biomedical Engineering here at Goddard.



Wayne Chen, Biomedical Institute Coordinator



George Greene and Martin Raftenberg, technique for measuring blood flow



William Renner and Robert Realey, a fast way of detecting bacteria



Chung Kim and Donald Gorelick, transducers for recording artery functions



DAVE HAINES (left) and Bob Martino attach electrodes to Harriet Rosenthal during a demonstration of their remote muscle controller. All students who took part in the Biomedical Institute presented the results of their projects in a Seminar held August 26.

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