



DR. JOHN C. BRANDT examines ancient American petroglyphs in the Village of the Great Kivas near Zuni, New Mexico. The star above the crescent moon on the left commemorates the supernova which created the Crab Nebula, he believes.

## Ancient Rock Art Valuable to Astronomers

By Don Witten  
Office of Public Affairs

Dr. Jack Brandt, Chief of Goddard's Laboratory for Solar Physics and Astrophysics is not a man given to overstatement!

What he described as a "simple two-mile hike" was more like a six-mile trek in a dark, wet desert with the constant thought that the next dirt clump kicked up would be a coiled rattlesnake. And the hundred pounds of gear we had to lug was like salt in the wound.

Why take a "two-mile" hike in the deserts of New Mexico with Jack Brandt?

Science Directorate Head Dr. George Pieper was there to see for himself the thousand-year-old canyon wall drawings which Jack had identified as having astronomical significance.

Keith Walters, Head of the Photograph Section, was there to photograph the drawings for the Office of Public Affairs.

Contract writer Dick Hoagland was there to research material for an upcoming book on astronomy.

My mission was to direct a Public Affairs effort to record and release the story to the nation's TV and other news media in late August.

An obvious question is: "What is the significance of ancient cliff paintings, each of which shows a bright star and a nearby crescent moon?"

"They possibly commemorate early man's sighting of a bright new star which appeared in the heavens for 23 days on July 5, 1054 A.D. This supernova, a star which exploded, created the Crab Nebula," Jack Brandt said.

Visible from the earth as an expanding cloud of gas and dust, the Crab Nebula is a natural laboratory for studying the phenomena involved in the violent demise of a star much like our own sun.

Calculations reveal that western North America is the only place where the Crab Nebula supernova could have been visible in conjunction with a crescent moon. Consequently, Dr. Brandt has made an appeal to Mexican astronomers and archaeologists for evidence of similar paintings possibly recorded by the Mayan civilization in the Yucatan area of Mexico.

In addition to the New Mexico paintings, similar paintings have been located in Arizona, California, and possibly Texas.

"Aside from its obvious astronomical significance in supporting Chinese records of the supernova sighting, a major value of our continuing effort is to the archaeologist. Once accepted, our interpretations of these paintings will help better date artifacts and other evidence of early man in areas where such paintings are found," Jack Brandt said.



DESERT TROOPERS—Left to right are Dr. George F. Pieper, Mrs. Barbara Pieper, Dr. John C. Brandt, Don Witten, and Keith Walters traversing the Chaco Canyon in the New Mexico desert.



Donald P. Hearth

Dr. Robert S. Cooper

## Don Hearth Appointed Langley Director

Donald P. Hearth, Goddard Deputy Director since 1970, has been appointed Director of Langley Research Center, Hampton, Virginia, replacing Dr. Edgar M. Cortright who has decided to leave the space agency to pursue other interests.

Mr. Hearth's successor will be Dr. Robert S. Cooper, Assistant Director for Defense Research and Engineering (Space and Advanced Systems), Office of the Secretary of Defense.

Both appointments will be effective September 1, following the launches of two Viking spacecraft to Mars, a project being managed by Langley.

As Deputy Director, Mr. Hearth has acted as General Manager of the Center, providing day-to-day management of Goddard operations and serving as the principal official for the management of scientific and technical activities. During the past year, he has directed an agency-wide examination of opportunities for future space activities. Mr. Hearth has served as Chairman of NASA's Equal Opportunity Council, a senior agency-wide advisory group comprised of all NASA Deputy Center Directors and Equal Opportunity Officers. In 1969, Hearth was awarded the NASA Exceptional Service Medal.

Before accepting the position in 1970, Mr. Hearth served as Director of Planetary Programs at NASA Headquarters. He was named to this position in 1967 after joining NASA in 1962 as Manager of Advanced Programs and Technology. He was previously Manager of Research on Hypersonic Propulsion and Flight Systems for Marquardt Corporation. Earlier, he was an aeronautical research scientist at Lewis Research Center under the National Advisory Committee for Aeronautics, NASA's predecessor organization.

Mr. Hearth received a B.S. in mechanical engineering from Northeastern University, has done graduate work in hyper-sonics and electronics and is currently pursuing an advanced degree in public administration.

In his current Department of Defense position, Dr. Cooper, Mr. Hearth's replacement, has the principal responsibility for space research and development (R&D) within the Office of the Secretary of Defense. He has also been responsible for high energy laser R&D as well as space sensor technology developments and special projects and has acted as Special Assistant to the Director of Defense Research and Engineering for intelligence-related R&D matters.

Dr. Cooper has a B.S.E.E. degree from the University of Iowa, an M.S.E.E. from Ohio State University and an Scd in electrical engineering from MIT.

Dr. Cortright, who will be leaving NASA, has been Director of Langley Research Center since 1968, after more than 20 years of research and development experience in aeronautical and space activities.

## Quality Assurance Division Offers New Course

Quality Assurance Refresher is a new 48-hour course open to all Goddard employees interested in procurement. Offered by the Quality Assurance Division and the Philadelphia Region of the Defense Contract Administration Service (DCAS), this course provides a thorough explanation of the many services available from the Goddard and DCAS quality organizations including pre- and post-award surveys, in-plant engineering services, inspection and acceptance services and on-the-scene monitoring of contractor and sub-contractor activities. The course, which was first presented to 10 Goddard employees in the end of July, also includes a step-by-step review of important quality-related NASA and DCAS procurement regulations, documents and procedures. The course will be repeated in October. For additional details and enrollment, contact George Kambouris.



**PARTICIPANTS** in the July Quality Assurance Refresher course were (standing, from left) Richard King (Head, Quality Engineering Branch), Jim Mitchell, Bill Cole of DCAS, George Kambouris (Acting Chief, Quality Assurance Division), Cliff Anderson of DCAS, (seated, from left) Winslow Womak, Tom Gunshinan, Joe Wonsever, Ted Rossi, Joe Bunevitch, Frank Barrett, Larry Smith, George Peters and Harold Schnur.



**THE LARGEST MINORITY CONTRACT** in Goddard's history and NASA's first to include incentive provisions, a \$1,225,000 agreement for janitorial and grounds maintenance services, was awarded on July 31 to Clean-Rite Co., Inc., of Washington, D.C. In special contract-signing ceremonies at the Center, Director Dr. John F. Clark finished signing the document under the watchful eye of Nathaniel Williams (seated right), president of Clean-Rite. Also on hand for the signing were (standing, left to right) Edythe Coopersmith, contract negotiator for Goddard; Tyrone Thompson, Clean-Rite Executive Vice-president; LeCount R. Davis, Clean-Rite Corporate Financial Advisor; Norma Prince, of the Small Business Administration, and technical representative Delos C. Dupree of Goddard's Plant and Operations Division. Clean-Rite will be responsible for all of Goddard's janitorial services, grounds maintenance, trash disposal, landfill arrangements, exterminator services and venetian blind cleaning and repair. The firm expects to employ about 115 people.



NATIONAL AERONAUTICS  
AND  
SPACE ADMINISTRATION

# WORLD OF WORK

# WORLD OF WORK



SHIRLEY BEACH of Personnel Services administers the entry level clerical examination to this year's 12 World of Work Workshop participants. Procedures for obtaining Federal employment were simulated so that teachers would be able to prepare students for a comparable experience.

## Educators Experience World of Work

Twelve Prince George's County secondary school teachers and counselors completed a four-week "World of Work" experience at Goddard on July 25. Sponsored by the Prince George's County Board of Education in cooperation with Elva Bailey, Richard Crone and Margaret Tindal of Goddard's Educational Programs Office of the Office of Public Affairs, this annual program enables area educators to gain "hands-on" experience in a wide variety of vocations.

This year's participants were Ann Bauman, Gwynn Park Junior High; Robert Bernard, Crossland Senior High; Lawrence Burns, Spaulding Junior High; Ann B. Chotiner, Samuel Ogle Junior High; Jan Doctrow, Rollingcrest Junior High; Peter M. Downs, Samuel Ogle Junior High; Patricia Jamison, Martin Luther King Junior High; George H. Marshall, Hyattsville Junior High; Ray Miles, Thomas Johnson Junior High; Ellen H. Smith, Eugene Burroughs Junior High; Vickie Washington, Eugene Burroughs Junior High; and Janet S. Welsh, Potomac Senior High. Each participant received a stipend from the Prince George's County School System and four hours credit from the Maryland State Department of Education.

The 1975 World of Work Workshop got under way on the morning of July 1 with an orientation session. Highlights of the day included a tour of Center facilities and an ATS-6 Health/Education Telecommunications Experiment conducted by Al Whalen of the Telecommunications Systems Branch. Other presentations were "Research and Development Mission of Goddard Space Flight Center" by William P. O'Leary of Public Affairs, "Environmental Monitoring from Space" by Lurie Shima of the Earth Resources Branch, "Cooperative Education—A Work-Study Plan for a College Education" by Bruce Boyd of Personnel Services and a preview of the coming week's vocational experiences by the appropriate Goddard supervisors.

On the second day, participants began rotating in pairs through the first six vocational clusters, spending one day in each area. Daily assignments for the first week were Closed Circuit TV and Electronics, Glass Technology, Library Technology, Photographic Technology, Printing and Duplicating and Publication Production.

July 11 featured a simulation of procedures involved in obtaining employment by the Federal Government. Each of the

educators completed an employment application, took an entry level clerical examination and participated in a discussion with Richard Morris, who interviews all candidates for entry level positions in the Spacecraft Technology Division. The purpose of this day's activities was to help teachers in preparing students for a comparable experience, whether it be in the private sector or in the government.

The next round of "World of Work" experiences began July 14 in the areas of Electronics Fabrication, Plant Operations and Maintenance, Health and Safety Engineering, Engineering Services, Management Services and Supply and Science and Applications Computing. For this part of the workshop, educators broke up into four groups of three.

"Cardio-Pulmonary Resuscitation," a technique for reviving heart-attack victims, was demonstrated to teachers on July 24 by Bruce Hersey of Bendix Field Engineering Corporation. Previously, three teachers had participated in an all-day course with Mr. Hersey and qualified for certification for CPR first aid.

Richard H. Kastner, M.D., Consulting Psychiatrist for Goddard's Health Unit, gave a speech on the "Problems of Junior High School Age Students in the School and in the Home." Following that, Jim Mundy of the Equal Employment Office spoke on "The Federal Equal Employment Opportunity Program."

After lunch, the group participated in a follow-up discussion on the federal employment system and then viewed TV tapes on career education from the ATS-6 Telecommunications Experiment in Appalachia and the Rocky Mountains.

The program was concluded on July 25 with a demonstration by Margaret Tindal on using LANDSAT imagery in the classroom, a film documentary entitled "Teachers Learn by Doing" and a preview of future NASA programs by Lloyd Aronson, Space Science Education Specialist.

Workshop Director for 1975 was Walter Savoy, Supervisor of Career Programs for Disadvantaged and Handicapped, and Coordinator for Prince George's County Public Schools was Anna N. Pratt, Vocational Development Teacher at Buck Lodge Junior High School. Anna was a returnee from last summer's World of Work Workshop in which she was a participant.

# NASA Aircraft Support Program Ends

The recent Apollo-Soyuz manned space mission, which marked the last use of an Apollo, also signaled the end of a little-known NASA program which provided vital test support of Goddard's world-wide Space Tracking and Data Network (STDN).

The STDN Aircraft Support program performed calibrations, engineering tests and simulations initiating the presence of actual spacecraft at all NASA tracking stations since the early days of NASA in 1958. At the height of the Aircraft Support program, seven specially equipped airplanes flew missions around the world to support tracking station tests prior to each manned space flight.

The aircraft successfully performed these tests since the very beginning of NASA, and they've turned in a perfect safety record," noted Francis I. P. (Frank) Glynn, manager of the Aircraft Support program since 1965.

Glynn, 58, pointed out that the aircraft in the program logged over 35,000 flight hours without an accident since the program's first support mission, a calibration of the early mini-track system.

The aircraft, carrying sophisticated calibration test equipment and actual spacecraft instrumentation, conducted pre-launch tracking tests for all of NASA's unmanned as well as manned missions, and completed annual calibrations tests at all the tracking stations.



FRANK GLYNN, manager of Goddard's Aircraft Support program, pauses for a final time to admire the Douglas C-118 aircraft which provided simulation and calibration test support of NASA's Space Tracking and Data Network (STDN). The 17-year-old aircraft program ended in July after a pre-mission test of NASA tracking stations for the Apollo-Soyuz joint manned mission. Newly developed ground tests will replace the Aircraft Support Program.



THIS IS THE FIRST NASA picture showing, very vaguely, the tail of the new comet, Comet Kobayashi-Berger-Milon (1975h.), taken the night of July 15 at the Joint Observatory for Cometary Research at 10,600-foot South Baldy mountain near Socorro, N.M. This plate is one of nine taken that night in a continuing program of studies of bright comets and the solar wind sponsored jointly by New Mexico Institute of Mining and Technology, Socorro, and Goddard. The photo was taken with the 14-inch F/2 Schmidt Telescope. The thin tail can barely be seen up to roughly two degrees on the original plate.



BIOFEEDBACK-AUTOGENIC CONTROL was the subject of two well-attended colloquia recently sponsored by Goddard's Health and Safety Engineering Office. The colloquia covered theoretical and applied concepts of biofeedback, biological applications and psychological areas of stress. Biofeedback and autogenic therapy may help a patient adjust or control many bodily functions previously believed to be completely involuntary such as heart rate, skin temperature or blood pressure. The colloquia staff consisted of Dr. Richard H. Kastner, Goddard Health Unit Consulting Psychiatrist; Dr. Shun-ichi Yamaguchi, Senior Psychologist, National Institutes of Health, and Dale C. Berman, Biofeedback Researcher, Metropolitan Biofeedback Institute, ALSI. Above, Mrs. Berman applies electromyographic feedback unit to a volunteer patient while Dr. Yamaguchi prepares to apply a themestor feedback unit to another volunteer. Both instruments are used to measure physiological stimuli which are simultaneously translated into audio-visual signals.

## Crane Safety Courses Completed

The Health and Safety Engineering Office completed the presentation of a course last month on the safe operation of cranes, lifting devices and rigging. The courses were given over a period of two weeks by instructors Charles Collier and Robert DeBenedictis of the James Company, Consultants Engineers, Inc., of Orlando, Florida.

Instruction on the safe operation of base-mounted hoists, mobile cranes, monorail cranes, drum hoists and overhead cranes, as well as safe rigging for each of the above lifting devices was provided. Hands-on training was provided via demonstration of proper rigging procedures using a scale-model crane built especially for that purpose by the James Company. This was followed by demonstration and use of safe operating procedures on designated cranes.

Each course culminated in certification of those who successfully completed both the training and the written exam that followed. 126 employees completed the course.



MOBILE CRANE OPERATOR SAFETY TRAINING—Mr. Charles Collier, James Company, points to the wire ropes which must be safety inspected daily by the operator before the crane is put under load. Shown looking on from left to right are: Robert Monroe, J. Pusey, R. Ryder, instructor Collier, O. Wright, W. Duelly, R. Ashton, F. Johnson, F. Harrod, W. Abney and C. Slaughter.

## A&M Gets New Director and Deputy

William A. Mecca has been named Director and Richard Sade Deputy Director of the Administration and Management Directorate. The appointments were brought about by the departure of "Sam" Keller for Headquarters.

The Directorate provides support to the entire center in a broad range of activities that touch the lives of everyone here almost daily: finance, administrative services, procurement, personnel, business management, resources utilization, construction and facilities, plant maintenance, legal affairs, patents, public information, safety, operations research and configuration management.

Mecca had been A&M's Deputy Director since July of 1973. Sade was Deputy Assistant Director of Administration for Flight Projects.

Mecca came to GSFC in December, 1963 from the General Accounting Office. He has received a number of awards, including a 1970 Goddard Exceptional Service Award and 1971 NASA Exceptional Service Medal.

Born in Scranton, Pa., Bill received a BS in accounting (Magna cum Laude) from the University of Scranton in 1955. Off duty, his prime interest is working with children. He has been on the Board of Directors and Treasurer of his local Boys Club, and has coached county Boys Club teams in baseball, football, and basketball.

Mecca and his wife, Maria and four children live in Bowie.

Sade, a Baltimore native, came to Goddard in March of 1963 from Martin Marietta there. He earned a degree in Industrial Management from the University of Baltimore.

He holds the GSFC Exceptional Performance Award.

Sade and his wife, Martha and their four children live in Crofton. His hobbies include sports and antique car rebuilding.



### Children Graduate from Child Care Center

On August 13, the Goddard Child Development Center held a graduation for the kindergarten and pre-kindergarten children. The program included songs, graduation marching, a diploma ceremony and a luncheon at the school.

The center, located on-site in Building 86, was parent-originated and is parent-administered. It provides a full-day educational program for children aged 32 months through kindergarten. The weekly fees paid by the parents totally cover the operational cost of the school.

The center is staffed with a director, teachers holding degrees in early childhood education and aides experienced in working with pre-school children. Above with this year's graduating class are Judy Rogg, teacher, (left) and Mrs. May Pollock, Director.

## Women Excel at Goddard



**Barbara Greer** is a computer technician in the Theoretical Astrophysics Branch of the Laboratory for Optical Astronomy, where she supports the scientists and engineers in their studies using data from satellites. Her major responsibilities include displaying and plotting data on the calcomp plotter and running systems utilities. She also makes test runs for the systems management facilities of the 360/91 and 75 computers. At present she is revising the tape archiving system for these machines.

Barbara joined Goddard in 1962 as a keypunch operator. She became interested in computers and took several courses in preparation for her current position. In 1972, Barbara received an incentive award.



**Rhoda S. Hornstein**, a mathematician with the Operations Support Computing Division, recently received the NASA Exceptional Service Medal.

As noted on the award, Rhoda received the medal "in recognition of exceptional contributions through unusual initiative and creative ability in providing accurate and responsive real-time computational support at NASA's Goddard Space Flight Center during the critical launch and early orbit phases of NASA spacecraft missions."

Since September 1974, Rhoda has been busy with the operational development of an improved real-time computing system. She has played a major role in the operational development and checkout of this computing system which has been used for orbit determination and acquisition during the manned Apollo and Skylab projects and the scientific space flight missions.

Rhoda joined the Goddard Real Time Support Team one month after graduating with honors from the University of Maryland in June, 1968. In December 1972, she viewed the night launch of Apollo 17 at Cape Canaveral as a Manned Flight Awareness Honoree.

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Lorel Foged, Editor  
Patricia Ratkewicz, Secretary, Phone Extension 4955