



GODDARD NEWS

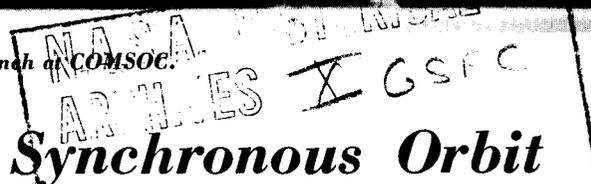
VOLUME V, NUMBER 4

THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

JULY 29, 1963



The Syncom team preparing for the moment of launch at COMSOC.



Syncom B Should Attain Near Synchronous Orbit

Syncom B was launched last Friday, just as the GODDARD NEWS went to press. If the shot is entirely successful, it will place the compact satellite in a near synchronous orbit, making it appear to hover in place above a fixed area of the earth. The launch marked the 19th straight success for the Goddard-managed Delta booster.

Operational control of Syncom is exercised from Goddard's Communications Spacecraft Control Center (COMSOC) in building 3. Both during launch and during the spacecraft's orbital lifetime, COMSOC is responsible for maintaining constant communication by teletype and telephone with communications and tracking stations at Cape Canaveral and around the world.

Al Jones, communications branch head, traveled to the Cape to coordinate launch activities there. Bob Darcey, Goddard's Syncom project manager, headed up the activities at COMSOC.

The Syncom should ultimately reach a near-synchronous orbit 22,300 miles above the earth. Its speed is such that it will orbit every 24-hours—thus appearing to hover in the same spot due to the equal speed of the earth in rotation.

Syncom's Mission

What does Syncom do? Once the satellite has achieved synchronous orbit (approximately 18 days after launch), it will be given a communications test by the USNS Kingsport anchored in Lagos harbor, Nigeria, and later with Lakehurst, N. J.

When the drift of the cylindrical active repeater satellite carries it westward over the

Atlantic to a favorable position, test messages will be exchanged for the first time via satellite between North America and Africa.

The satellite will be useable almost 90 per cent of the time for transoceanic communications due to its stable position in space.

The government of the Federation of Nigeria has permitted

the communications ship, the USNS Kingsport to be stationed in Lagos harbor to conduct communications tests with the Syncom. The Kingsport will intercept signals from the satellite with a 30-foot parabolic antenna. Another such antenna is located at Lakehurst, N.J.

Syncom B is a complex but compact piece of equipment. The 86-pound cylinder is only 28 inches in diameter and 15½ inches high, yet the side surface is covered with 3840 silicon solar cells which power the electronic equipment by supplying energy to the nickel cadmium batteries.

Most electronic systems aboard Syncom B are redundant. There are two transmitters and two receivers in the cylinder. Either receiver may be used with either transmitter. The total power consumption of the eight-pound transponder is only 16 watts.

There are two identical command receivers within the satellite. Commands Syncom can receive from ground stations include telemetry and communications system switching, gas jet firing, and apogee motor firing. Electronics are turned on or off with 12 command signals. Another 13 commands are used for control.

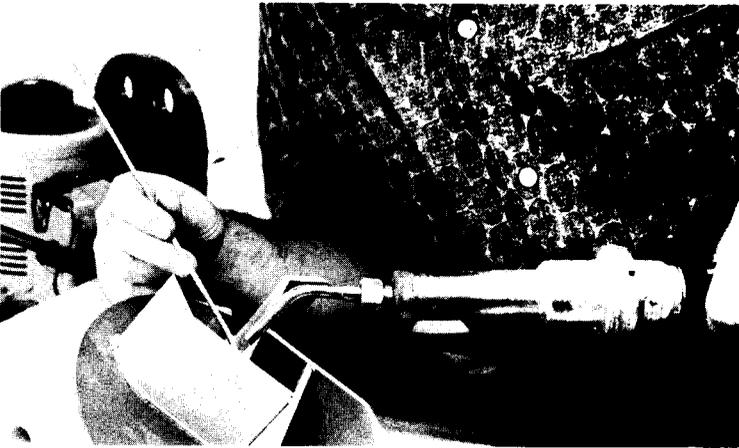


This artist's conception shows the Syncom's on-board rocket engine pushing the satellite to its near-synchronous orbit, which it will reach 18 days after launch.

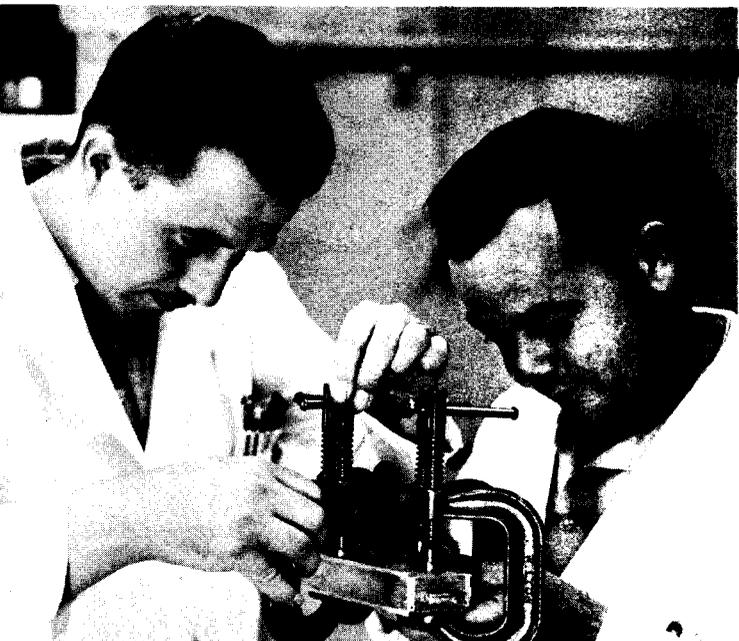
Craftsmen in Wood and Plastics Give Shape to New Ideas



Andrew Hazen (left) and section head Clifford Link are checking the spacing of coil windings on a magnetometer tube fabricated by the section for a Goddard project.



This is how a hot air torch "welds" joints, using a plastic welding rod. The splasher mechanism was ordered by the plating shop.



Rodney Spencer (left) and Walter Tankisly demonstrate the teamwork that is a part of their everyday duty at the shop.

Unusual, unexpected and fascinating things come to light when one discovers Goddard's little-known plastic and wood model section, a part of the fabrication division.

Terms such as polyurethane, epoxies, polyvinyl, polycarbonates and a host of others as esoteric are commonplace in the section. An engineer's dream can spring to life there, perhaps given shape by plastic welding—a process which literally welds two pieces of plastic materials together using a stream of superheated air from a torch and utilizing a plastic welding rod.

The section provides the center with a complete in-house capability for "potting" operations. Electronic potting involves creating foam to protect delicate and minute components—resistors, transistors, cables, etc.—from vibration damage during launch and orbit of earth satellites.

The foam is made by mixing a resin and a catalyst in just the right proportions, stirring them until the foam begins to rise (excessive mixing increases the amount of foam) and pouring the substance on a maze of intricately assembled wires and connections. The assembly is placed in a steel mold and cured at 154 degrees fahrenheit for an hour and a half. The result: a solidified package of electronic gear capable of withstanding extreme vibrations at liftoff.

For example, a six-quart bucket of liquid polyurethane foam will expand to fill a six-foot nose cone, foaming and protecting the tiniest and most

intricate electronic components as it does so.

Clear plastic domes can be created in the section by the use of heat and vacuum. Metal that melts in hot water (158° fahrenheit) can be sprayed into forms for a variety of uses.

Working primarily with non-metallic materials such as rubber, plastics, or wood, the facility is capable of all work involving plastic vacuum forming, injection molding, compression molding, reinforced fiberglass lay-up, plastic welding, heat sealing, wood model making and pattern making in addition to the potting and encapsulating processes already mentioned.

Clifford Link, section head, is justifiably proud of the craftsmanship and creative ability of his highly skilled and motivated colleagues. His men have many years of experience, most having worked in plastics and model making at NRL, Langley Research Center and the Naval Weapons Plant before joining Goddard.

At present the section is at work on a variety of projects. It has an order to design and manufacture a fluxicalibrator for a magnetic aspect sensor. The finished piece will be 100 percent nonmagnetic, i.e., made entirely of wood and plastic.

A 15-foot reinforced fiberglass boom is being developed for the vertical freespace facility on the antenna test range.

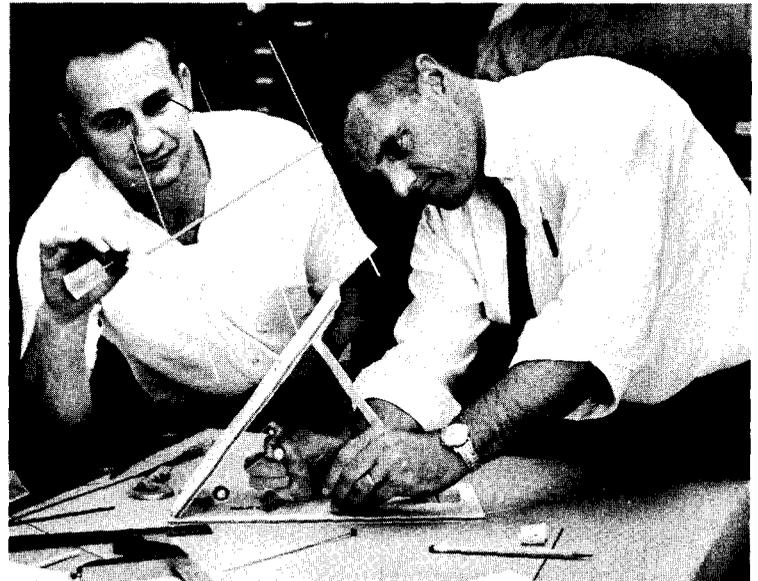
A "lathe" improvised entirely of wood was made for the purpose of wrapping fiberglass cloth impregnated with epoxy resin around a mandrel to form



Stuart Tull is applying a resin to fiberglass cloth as the specially-constructed wooden "lathe" slowly turns the job.



BEFORE—Joe O'Connor (right), engineering design section, shows Andrew Hazen his rough model of an antenna mount.



AFTER—Hazen and O'Connor examine the finished wood and plastic model prepared by the section's craftsmen.

sections of the boom. The drive problem was solved by using a welding positioner and a "V" belt drive. The boom is then wrapped in three separate 5-foot sections, removed from the mandrels, bonded together, then put back on the lathe as a 15-foot length to be wrapped to its final dimensions.

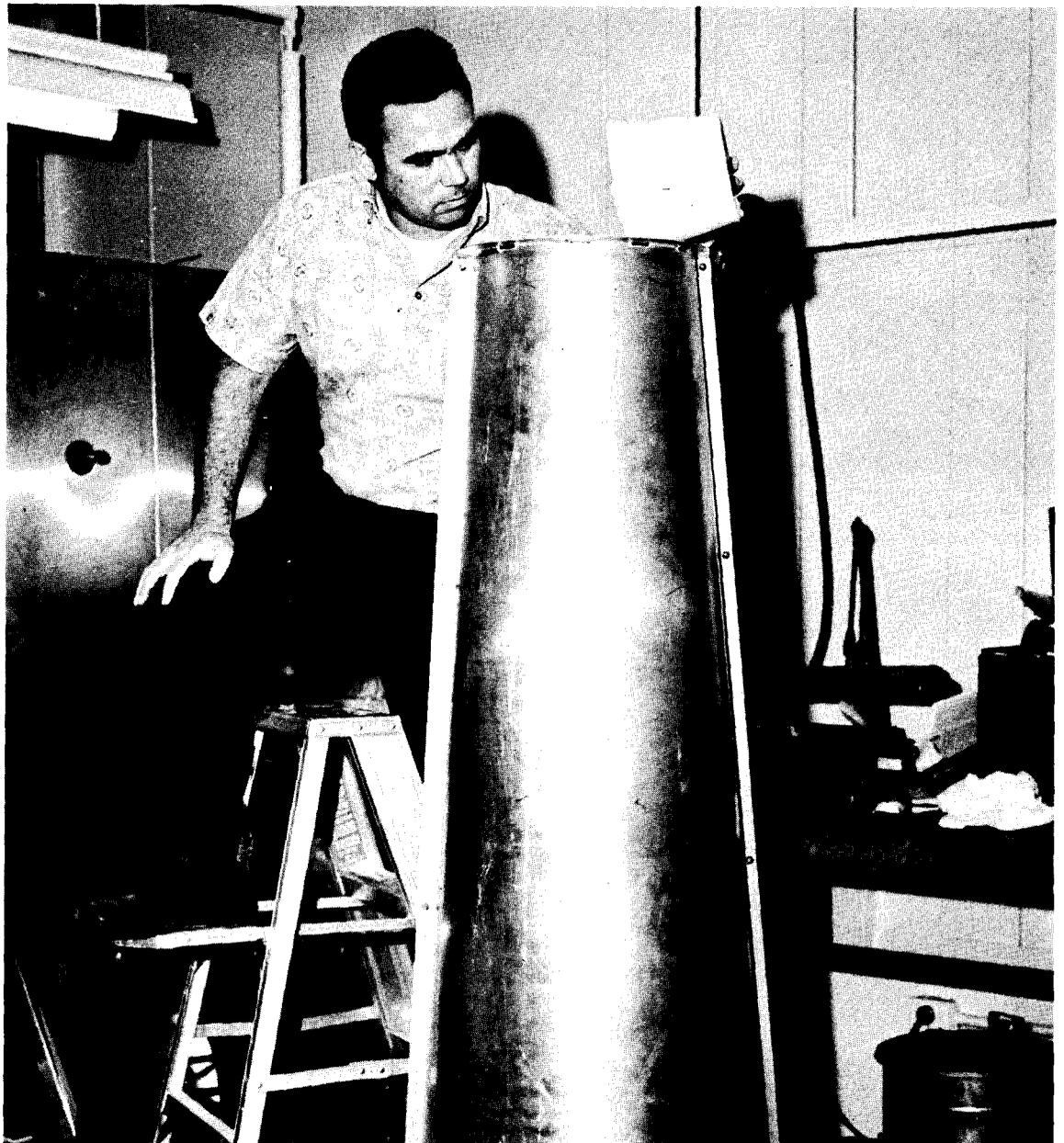
The section owns an injection molding press into which nylon pellets are inserted, then heated and pressed into a cavity mold to form electrical connectors, plugs and an assortment of other components.

Their 100-ton compression molding press is used to form laminates, which are made by pressing or "plying" several layers of material such as fiberglass, into one. And the section can form a hemisphere by placing a flat piece of plastic on a circular metal form, heating the plastic to 300 degrees and drawing a vacuum through a hole the size of a pin.

Interest in nonmetallic materials for spacecraft application has increased because of the need for nonmagnetic materials.

"We utilize wood because it is fast and inexpensive," said Mr. Link, "A wood mold can be made in a day, while a metal mold may take as much as a week." The section is presently making a wood model of the Relay-B satellite for Goddard's exhibit room.

Rubber finds a variety of uses as well. The section recently made a rubber polishing head to buff glass parabolas. It also uses rubber as gasketing sealings and flexible molds.

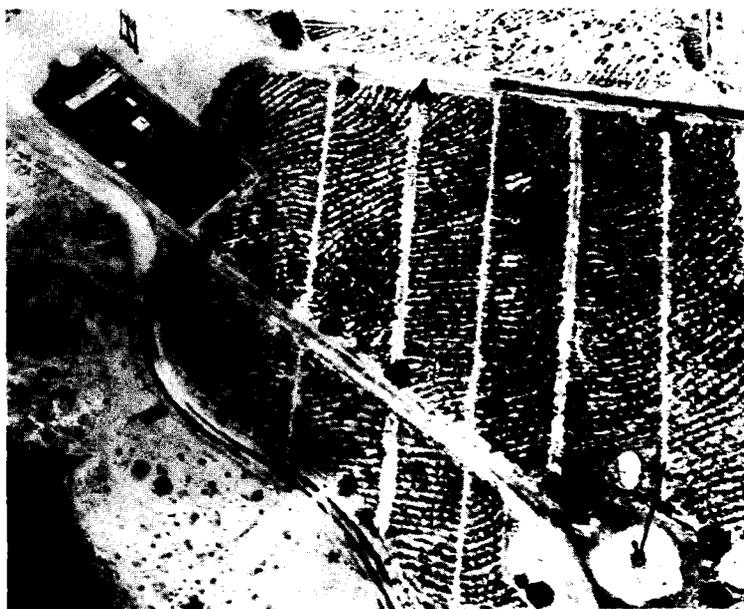


This six-quart bucket of liquid polyurethane will create enough foam to fill the six-foot nose cone. Stuart Tull is pouring the material in to demonstrate how electronic components are guarded from shock by the "potting" process.

Tracking Site Director Enjoys Working for Goddard in the Cai



In the center foreground stands the historic lighthouse on the tip of Grand Canary Island. Some buildings of the tracking station are in the upper right of the picture.



This aerial view shows the S-band radar station (left) and the surrounding textured landscape. The radar boresight tower is at the right, with the lighthouse (not shown) further down the beach.

Are the Canary Islands really named after birds? Not at all, according to Chuck Rouiller, Goddard site director for the Grand Canary Island Manned Spacecraft Tracking Network station. The name is derived from the Spanish term meaning dog, since canines have always been plentiful there.

"It is going to be hard on my wife to return to the States," Rouiller told the GODDARD NEWS. "... Where then will she find time for golf three times a week, guitar lessons, language classes, shopping trips to the neighboring islands and the beach at her back door 365 days a year?"

In addition to Rouiller, 23 Bendix contract personnel work at the station, as well as 16 indigenous personnel employed through a Bendix subcontract. Sixteen of the Bendix personnel are married, and live with their families in Las Palmas, 40 miles north of the station.

The station is equipped with the acquisition aid system for initially acquiring the spacecraft, a radar system for determining the position of the spacecraft as a function of time, a telemetry system for monitoring the condition of the craft and the astronaut, a spacecraft communications system for direct communications with the astronaut, and another communications system which links the remote station with Goddard and the rest of the network.

When not involved in an actual manned mission, the personnel are performing maintenance on the complicated equipment, and a constant series of tests. At least twice a year, the Goddard network evaluation and training aircraft passes overhead to check the equipment.

The Grand Canary site, as others in the network of 16 stations which lie near the equator around the globe, serves as a study in international relations as well as a vital part of the space program.

"All American employees speak Spanish in varying degree," Rouiller reported. "Generally the children pick it up quite readily. All the wives, as a minimum, can hack 'kitchen' Spanish. Among the men, the bachelors seem to be the most adept. After all," he added

wryly, "there are not many English-speaking single ladies on the island."

Station personnel are reportedly very active in community affairs, with many being involved in local clubs. The station manager is on the board of governors of the Hispano-American School in Las Palmas. Six ex-bachelors have elected to marry Spanish senioritas.

There is a low rate of turnover at the station, no doubt an evidence of the fact that Americans can enjoy a more relaxed existence with no ill effects.

Of the 23 Bendix people at the station, only six have been there for less than a year, and they replaced "long-timers." Five have been at Grand Canary station since installation in 1960.

The Canary Islands are located off the Northwest coast of Africa in the Atlantic Ocean near the equator. They are a province of Spain. The city of Las Palmas is a cosmopolitan port city of approximately 200,000. It attracts thousands of northern European tourists annually.

Boating, swimming, skin diving, tennis and golf are popular sports on Grand Canary Island. The city has one American-style



Here some Canarians are working in the aerial views of the station.



INSIDE GODDARD

GODDARD SPACE FLIGHT CENTER / GREENBELT MARYLAND

July 29, 1963

Painting Is a Natural For Pat

This is the first in a series of articles on Goddard employees and their hobbies.

Sure'n tis Irish—Patrick M. Kelly, who these days can be found almost anywhere with his paint brushes and easel in tow, fills that description to a shamrock.

Pat heads the visual arts branch, which is a natural for him. Since childhood he has been interested in drawing and painting—in general—art. For years Pat has been busy building his career in the field he knows best—commercial art. This past Fall he decided to use his talents for pleasure and started painting in water colors.

On April 19 at the eleventh annual outdoor art festival in Baltimore, Md., Pat had his first showing. Much to his surprise he sold four paintings. Since then he has sold four more.

"This is great," said Pat. "I paint because I enjoy it. I find it's very relaxing and I'm making money."

"Side Gate" Wins

Recently he entered three paintings in the ninth annual Harper's Ferry art festival in West Virginia and received first prize in the water color division for his painting called, "Side Gate." He made his sketches for this work in nearby Annapolis.

He received a cash award and an engraved silver bowl for his "masterpiece." Two hundred artists participated in the contest from six Eastern states and the District of Columbia.

Pat is a member of the Baltimore Water Color Club and the American Art League. He studied at Columbia Technical Institute in Washington and the Ringling School of Art in Sarasota, Fla.

Pat gets a lot of encouragement from his wife Thema and their three children. He is a native and one of Goddard's old timers since 1960.



Pat in his studio at home is putting the finishing touches on one of his paintings.



Pat's masterpiece "Side Gate."

Employees Celebrate New Years In July

"Happy New Year" was the exclamation for the procurement dance held July 12 at St. Bernard's Crystal room.

All old business ended June 30 and July 1 marked the beginning of a new fiscal year for the procurement division.

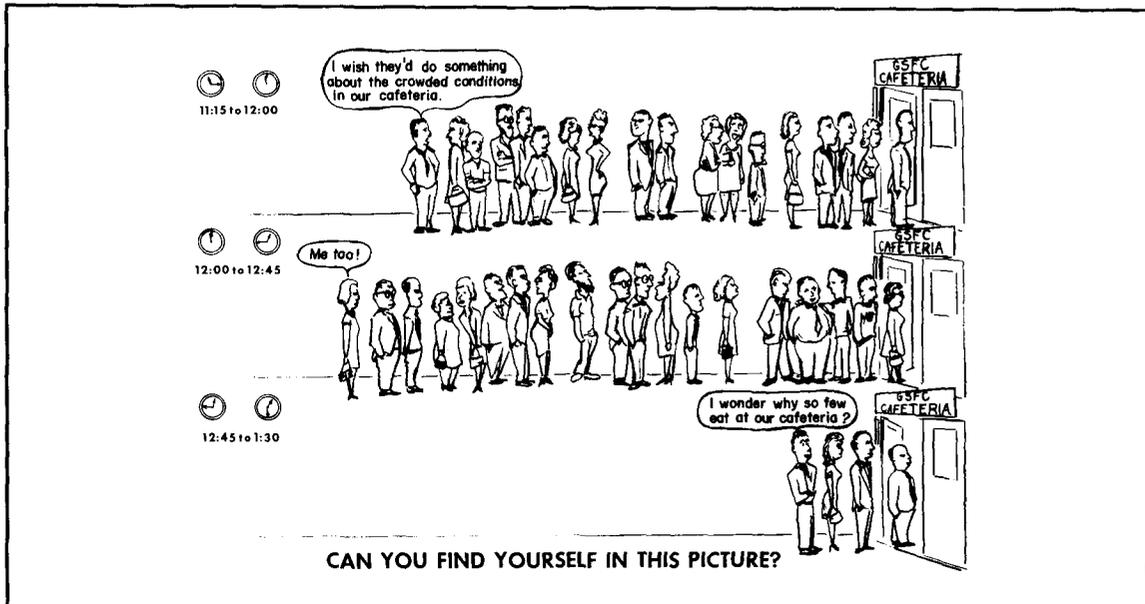
The main attraction for the evening was a floor show put on by the Jack Andre Studio. A hilarious comedy routine featuring Betty Booker, captured the applause of an audience well over 200.

Dancing under the changing lights to music by the Bluenotes completed the atmosphere for a terrific evening.

The great combination of Henriann Bogan, Nancy Falwell, Carol Pace, Leslie Richards and Al Riskin was the secret to the successful affair.



In her bright red costume Betty's hula act brought down the house.





Shower's of gifts were not predicted the evening Mary (Oliver) Montgomery thought she was going to a friend's house for dinner. Mary surprised everyone when she returned from vacation flashing those two rings on the left hand. Mary's has been a familiar face in procurement division since she came to Goddard in 1960.

Slow-Pitch Playoffs Near

With only six weeks left to play, the teams in the Slow-Pitch Softball League are literally in there pitching.

The playoffs between the two divisions promise some real excitement.

Coming in to home plate, here's how the teams stand:

Western Division	W	L
T & E Terrors	8	2
Fields & Particles	7	3
R. F. Chokes	5	5
Gastronauts	4	6
Space Pirates	4	6
Space Hustlers	1	9
Eastern Division	W	L
Boosters	9	1
Fab Cats	5	5
Maulers	5	5
Aero-Mets	5	5
Eagles	4	6
Nothings	3	7



Some days you can't win them all decided Jack Libby, Space Pirates, when he missed that homer.



Space Pirate Ron Miller tags team mate Bob Snyder in a practice session before the Pirates met the Nothings last Thursday.

GODDARD WELCOMES

Fabricating Division

Davis, Charles L.

Financial Management Division

Dunfee, Charles L.

Myers, Israel

Management Services & Supply Division

Robertson, Jane E.

Robison, Francis P., Jr.

Manned Space Flight Support Division

Brennan, Jerome P.

Livesay, James, Jr.

Office of Administration

Witten, Donald E.

Operations & Support Division

Penge, Anthony J.

Robinson, Claudia S.

Organization & Personnel Division

Schmidt, James B.

Procurement & Supply Division

Kane, Irene L.

Potter, Curtis L.

York, Edward T.

Project Support Office

McDaniel, Margaret E.

Spacecraft Systems & Projects Division

Elliott, Nevarro C.

Speck, Jefferson W.

Spacecraft Technology Division

Hardenburg, Kathryn A.

Space Data Acquisition Division

Keipert, Frank A.

Meyers, Sidney I.

Poland, William, Jr.

Tracking & Data Systems Division

Davis, Walter T.

Kalil, Ford

Coming Up Next

Scheduled for showing next month is the film entitled "The H Bomb," which was produced by the British Information Service.

The film describes the destructive effects of a nuclear explosion and how to combat them.

August Schedule

Date	Time	Place
5	12:00 p.m.	Bldg. 6, Rm. C-206A
6	12:00 p.m.	Bldg. 7, Rm. 231
7	12:00 p.m.	Bldg. 3, Auditorium
8	12:00 p.m.	Bldg 5, Rm. 101
9	12:00 p.m.	Bldg. 2, Rm. 115

FROM "Lil Asters"...

Dear Sir,

I am a boy of 12 and like space. I have over 900 books on it 610 letters and a letter from all 7 astronauts NASA knows me well and I know NASA well, too.

Could you please try to send me some books on your space station and space. I would appreciate them very much.

Yours in Space,
Jerry J
Lakewood, Calif

ary Islands

supermarket, and social life on the island consists mainly of house parties, dinner dancing and club membership.

The station personnel celebrate most of the local holidays with the population of the island. Three Kings Day, near the Christmas season, is a gala occasion and the station employees hold a celebration with the Canarians as guests (see photo). Just as at home, the children are in the limelight.

The pace of life is far slower than in the United States, and the resort atmosphere is conducive to relaxed living. Each Sunday, for example, typical Canarian folk dances are held in the "Pueblo Canario," a replica of an early Canary Island village.

A lighthouse on the edge of the station property provides a vivid contrast between two guideposts—one for the ships on the high seas, the other for the explorers in the ocean of space.

This is the first in a series of articles dealing with Goddard's Manned Spacecraft Tracking Network stations around the world.



The tracking station personnel hold a party annually on Three Kings Day, a Spanish celebration during the Christmas season. Two Bendix contract personnel, Scharfeld (left) and Foote are dispensing ice cream and soda to Canarian children.



g with the surrounding land, giving it the textured effect so notice- tion.



These microbusses are used for transportation between the site and the city of Las Palmas 40 miles to the north.



The "Three Kings" in this picture are (from left): Bendix personnel Brown and Hampton and Goddard's Chuck Rouiller.

A Boost for EGO:

TEAMWORK PAYS IN ANTENNA ASSEMBLY



Standing before one of the dish type antenna and pedestal combinations assembled by the antenna systems and fabrications "team" are the participants (from left): Donald Jones and Andrew Boschert, fabrication division; Joe Kueberth, antenna systems; Christos Maskaleris, project manager of the Darwin mobil facility; and Fred Meader and Dick Wagner, antenna systems.

Recipe for success: Take plans drawn up by Goddard's antenna systems branch, then add four antennas (two dish type and two Yagi type) built by the Technical Appliance Corp. (TACO), and four pedestals constructed by Scientific Atlanta, Inc. Mix in a large dash of help from the fabrication division, and blend all these ingredients in building 5 before wrapping for shipment to Australia. The result is a boost for Goddard's EGO, and several firsts for the Center.

The antenna system was designed to track the first satellite in NASA's Orbiting Geophysical Observatory (OGO) series into orbit. The EGO (Eccentric Orbiting Geophysical Observatory) is due to be launched from Cape Canaveral within a year. These antennas will track it into orbit from Darwin, Australia, and receive telemetry.

The recipe is a bit unusual, since this is the first instance of antenna and pedestal being built by different manufacturers in different places, then being integrated as a unit here.

An Easy Remedy

Richard J. Wagner, project coordinator for the antenna systems branch, said "The few minor mechanical misalignments that occurred during initial construction were easily

remedied with help from the fabrication division."

John Flowers was very active in the advanced planning of the project. Fred Meader and Joe Kueberth were also assigned to the activity, and are working with Wagner. All are members of the antenna systems branch.

The fabrication division provided two men, Andrew J. Boschert and Donald S. Jones, who

worked with the antenna systems personnel throughout the operation. They also helped with the partial dismantling of the system for transportation from building 5 to the new optical test range where the antennas are now mounted for testing. This is the first use of the nearby range.

Tests Are Underway

Tests are being completed to make sure the integration of the antennas and pedestals is correctly aligned and to make sure both antennas and pedestals are working properly electrically. Some satellites now in orbit will be test tracked.

Antenna systems branch head Thomas S. Golden says that the antennas and pedestals will be turned over to the systems-development branch at the completion of testing. Then, off to Australia to track EGO.

Recent Technical Publications

Authored by Goddard Staff

R. G. Hartenstein and W. G. Elsen, "Mechanical Impedance Study of the X-259 Rocket Motor," NASA Technical Note D-1681, June 1963.

P. Musen and A. E. Bailie, "On the Motion of a 24-Hour Satellite," NASA Technical Note D-1750, June 1963.

M. E. Lipschutz, "Cosmic-Ray-Induced Stable and Radioactive Nuclides in Meteorites," NASA Technical Note D-1844, June 1963.

F. G. Cunningham, "Earth Reflected Solar Radiation Incident Upon an Arbitrarily Oriented Spinning Flat Plate," NASA Technical Note D-1842, July 1963.

A. Temkin and E. Sullivan, "Nonadiabatic Theory of Electron-Hydrogen Scattering, Part II," NASA Technical Note TN D-1702, July 1963.

Mueller Chosen to Succeed Holmes

Dr. George E. Mueller, formerly vice president for research and development of Space Technology Laboratories, was named last week to the new position of deputy associate administrator for manned space flight, effective September 1.

Dr. Mueller succeeds D. Brainerd Holmes who recently resigned as director of the office of manned space flight and deputy associate administrator for manned space flight centers.

He will have responsibility for NASA's office of manned space flight and NASA's field centers directly concerned with manned space flight (Marshall Space Flight Center at Huntsville; Manned Spacecraft Center at Houston; and Launch Operations Center at Cape Canaveral).



Dr. Mueller

Dr. Mueller gained detailed experience on the Atlas, Titan, Minuteman, and Thor ballistic missile programs, and NASA's Pioneer and Explorer space programs, while employed at the Space Technology Laboratories.

He has been serving for the last year as vice president for research and development at

STL, where he had overall responsibility for the technical operations of the company.

His 23 years of experience includes extensive research in electromagnetic theory and application, television, microwaves and microwave antennae, missile guidance systems, deep space communications, systems engineering and space payload design.

He received a B.S. degree in electrical engineering from the Missouri School of Mines in 1939. He earned his M.S. degree in electrical engineering at Purdue University where he also was a research fellow. Following graduation, he worked for six years at the Bell Telephone Laboratories.

While at BTL, he continued his studies of physics at Princeton University, then transferred to the Ohio State University where he was awarded a Ph.D. in physics. He taught electrical engineering at Ohio State University for more than 10 years and has served as a consultant to several leading defense companies.

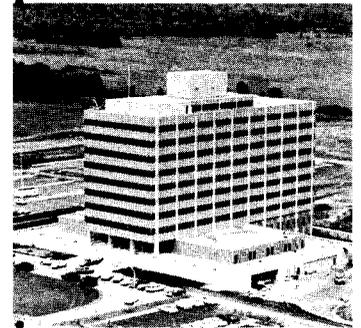
Dr. Mueller belongs to the Air Force Association, the American Ordnance Association, and the American Association for the Advancement of Science. He is a Fellow of the Institute of Electronic and Electrical Engineers.

He is a member of the American Physical Society, the American Geophysical Union, the Union Radiotelegraphique Societe International, Tau Beta Pi, Sigma Xi, Sigma Pi Sigma, Eta Kappa Nu, R.E.S.A., and the New York Academy of Science.

News About Space & Aeronautics

● Boeing Aircraft Company of Seattle, Wash. has been selected by NASA to carry out a four-month study of a lunar base concept as the first phase of a broad lunar base study program to determine if a base should be established on the moon after the Project Apollo manned lunar landing mission is accomplished. At the present time, there are no plans to undertake development of a lunar base.

● Shown at right is an aerial view of the new Central Laboratory and Office Building at the Marshall Space Flight Center, Huntsville, Ala. The structure, costing about \$4 million, accommodates some 1,200 Marshall employees, including Dr. Wernher von Braun, the Center's director.



● Joseph A. Walker, chief research pilot of the NASA Flight Research Center at Edwards, Calif., recently set a new altitude record of 350,000 feet (66.3 miles) during a flight with the X-15 research aircraft.

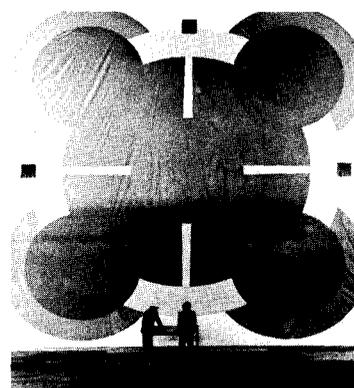
● During the later phases of project Gemini, an astronaut will leave his spacecraft and float freely in space, with only a "leash" connecting him with his capsule. If he is too eager to return to the spacecraft, and pulls with excessive vigor on his tethering line, he may hurtle himself on a collision course with the spacecraft—and there are no brakes provided!

One solution may be a rigid type tethering line. With such a line, the astronaut could edge along slowly without abruptly jolting either himself or the capsule. This is but one of the possible answers to the complex questions about space environment, according to engineers at the crew systems division of the Manned Spacecraft Center in Houston.

● Ames Research Center has chosen a contractor for its man-carrying motion generator, a part of a proposed space guidance research facility which will ultimately be capable of simulating every known factor of control and navigation of space flight with the exception of weightlessness. Genisco, Inc., a small business concern in Los Angeles, will develop, fabricate and assemble the motion generator.

In addition to the motion generator, the facility consists of three major components: a computer for establishing motions and maneuvers throughout a full range of operations in space flight; a support and drive mechanism for the simulator; and a large structure to house the entire complex. The facility is scheduled for completion in about two years.

● Two NASA engineers are dwarfed by this full-scale drawing of the end view of the Saturn V tail section.



The enormous first stage booster will be 33 feet in diameter and 138 feet long. Michoud Operations Center will build ten of these Saturns to facilitate America's push toward the moon. The four dark circles and one center circle represent the booster's five 1.5 million pound thrust F-1 rocket engines. The entire Saturn V configuration is approximately 350 feet high, more than double the height of Niagara Falls.

Goddard Speech and Paper Presentations

(Technical presentations approved as of July 23 for period of July 29 through August 11. Requests for copies of speeches and papers should be made directly to the author.)

SPEECHES

M. P. Nakada, Low Frequency Electromagnetic Radiation Institute, Bad Homburg, Germany, July 22-Aug. 2, "A Study of Ionospheric Winds and the Dynamo Theory of Auroras."

Albert L. Hedrich, Inter-American Institute for Space Science Education, University of South Florida, Tampa, Florida, July 29-Aug. 10. "NASA Communications Satellites."

Anthony Buige, Aerospace Support Systems Committee & the Washington Section of American Institute of Electrical Engineers, Washington, D.C., Aug. 4-9. "Operational Planning for the Support of Aerospace Missions."

W. J. Carrion & E. Y. Lee (Nortronics), Presentation at Society of Photo-Optical Instrumentation Engineers, Los Angeles, California, Aug. 5-9. "NASA Precision Multi-Mode Tracking Mount."

D. G. Mazur, International Conference on Aerospace Support, IEEE Washington, D.C., Aug. 8, "Results of Relay & Telstar."

Skies Clear in Maine for Goddard Eclipse Watchers



Hundreds of scientists from NASA and other organizations were on hand in Maine for the solar eclipse earlier this month

—but the majority were disappointed by the interference of cloudy skies: Not so the two Goddard scientists pictured

here. Francois Dossin, standing at right, and Luc Secretan were the luckiest among the swarms

of sky-watchers. Dossin is a Belgian scientist currently working at Goddard under a NASA grant. He and Secretan of the astrochemistry section in the astrophysics branch are observing the beginning of the eclipse just as the clouds parted to give their photographic equipment a clear "shot." Note the crescent shape projected on the cardboard as the moon began to move across the sun.

The Clouds Part

Seconds later, the view was again obscured by clouds—which drifted apart again just before totality giving the clear view necessary for a series of photographs. More than 40 pictures of the six trillion square miles of the sun's corona were taken by Dossin and Secretan using their "home-made" equipment (see GODDARD NEWS, July 15 issue.)

Comets May Be Found

It is hoped that when the photographs are developed and the results analyzed, some faint comets may be found in orbit around the sun that could not have been detected in the face of the full sun. Scientists have long desired to make detailed photographs during an eclipse to prove or disprove the theory that there are many more comets in orbit in our solar system than we have previously been able to discover.

Perhaps, in the "twilight zone" of the total eclipse, Dossin and Secretan have ferreted out some previously hidden heavenly bodies silently whisking through space near the blazing center of our whirling dervish of planets and asteroids.

Whipple and Johnson Receive Patent Awards

Elden C. Whipple, planetary ionospheres, received a \$1,000 patent award in a special ceremony at NASA headquarters on July 18. Whipple's award, granted for an improved method and apparatus for determining the orientation of a space vehicle in flight, was given recognition at the same gathering where the Rogallo husband and wife team received the largest patent award (\$35,000) ever granted by NASA. Dr. Hugh Dryden, NASA

deputy administrator, made the presentations.

Navy Award

Another Goddard employee, Glenn C. Johnson, technical management, received a \$50 patent award from the U.S. Naval Ammunition Depot of Crane, Ind., for a hand operated emergency signaling device for use by military personnel. The \$50 award was made pending detailed evaluation of the worth of the invention to the Navy.



Elden Whipple (standing, left) receives his \$1,000 patent award from Dr. Hugh Dryden. Right insert is Glenn C. Johnson, who received a patent award from the Navy.