

Space News **ROUNDUP!**

VOL. 4, NO. 20

MANNED SPACECRAFT CENTER, HOUSTON, TEXAS

JULY 23, 1965

Vice President Visits Center For Briefing, Tour



CONTROL CENTER—Vice President Hubert Humphrey (far left) observes a simulated Gemini liftoff and portion of a mission on his visit to the Center July 13. Shown with the Vice President are (l. to r.) John D. Hodge, Dr. Robert R. Gilruth, Dr. George Mueller, George M. Low and Eugene F. Kranz.

Practice Rendezvous With Special Device To Be Attempted On Gemini V Mission

A dress rehearsal for the first Gemini rendezvous mission will take place during the Gemini V mission, with Astronauts L. Gordon Cooper Jr. and Charles Conrad Jr. at the spacecraft controls, August 19.

Although the prime objective of Gemini V will be a long-duration spaceflight of eight days for determining the biomedical ef-

fects upon man during long periods of weightlessness, techniques for later rendezvous missions will also be developed during the flight.

Playing the role of the Agena target vehicle to be used in the Gemini VI mission will be a 76-pound box-like device called Rendezvous Evaluation Pod, or REP. An Agena rendezvous

radar transponder and flashing beacons are packaged in the REP along with batteries and antenna. The practice rendezvous with the REP in Gemini V is actually a scaled-down version of the Gemini-Agena rendezvous scheduled for Gemini VI.

Mid-way through the second revolution, at two hours and 25 minutes after lift-off, Command Pilot Cooper will yaw the Gemini V spacecraft 90 degrees to the right. Explosive charges will eject the REP from its canister in the adapter section northward at five feet per second. Gemini V will then maneuver away from the REP to attain a position six miles below and 14 miles behind the REP. Subsequent phase adjustment and orbit circularization maneuvers will place Gemini V in what is called a co-elliptical orbit — that is, the spacecraft will be at a constant altitude below the REP but reducing the trailing distance, since the spacecraft in its lower orbit is travelling faster than the REP.

Range and range-rate data will be displayed to the Gemini V crew by the rendezvous radar system when the system "locks on" to the signals being bounced back to the spacecraft from the

Vice President Hubert Humphrey was in Houston for a quick tour of the Manned Spacecraft Center July 13 and was briefed on the current manned space programs.

He and his party, which included Rep. Carl Albert and Sen. Fred Harris from Oklahoma, were briefed on the Gemini program by Charles W. Mathews; on the Apollo program by Dr. Joseph F. Shea and on the life support systems by Richard Johnston of Crew Systems.

The Vice President took a "ride" in the Gemini docking trainer with Astronaut Walter M. Schirra and then he and his

party observed a simulated Gemini liftoff at the Mission Control Center and a portion of a mission.

While at the Center the Vice President greeted and shook hands with many of the people as he made the rounds during the tour of facilities.

Vice President Humphrey arrived at the Houston airport at 12:55 p.m., where he was greeted by Dr. Robert R. Gilruth, director, MSC. By 4:30 p.m., the Vice President, and senators and representatives from Oklahoma that accompanied him, were in the air and on their way to Oklahoma City.



APOLLO BRIEFING—Vice President Hubert Humphrey (right) enjoys a joke during the Apollo briefing that was presented by Dr. Joseph F. Shea (left) on the Moon program.



RENDEZVOUS EVALUATION POD—David C. Schultz (right), an aerospace technologist with the Flight Crew Support Division, explains a full-scale mock-up of the Rendezvous Evaluation Pod (REP) to Astronaut Donn F. Eisele. The REP is planned for use during the Gemini V space flight.



DOCKING TRAINER—Vice President Hubert Humphrey climbs the tall ladder to enter the Gemini docking trainer located in the black-painted interior of the MSC building that simulates the darkness of space. Astronauts Walter M. Schirra Jr. and Thomas P. Stafford, the Gemini VI crew, stand beside the simulator. The Vice President took a ride in the simulator with Schirra. (SEE MORE PHOTOS PAGE 2)

(Continued on Page 2)

Vice Presidential Visit



BRIEFING—Vice President Hubert Humphrey (left) and Representative Carl Albert listen as they are briefed at the Center on the manned space programs.



GEMINI BRIEFING—Vice President Hubert Humphrey here for a visit July 13 is briefed on the heat shield of the Gemini 3 spacecraft by Dr. Robert R. Gilruth (left) and Charles W. Mathews (right).



SUIT BRIEFING—A briefing on the Apollo and Gemini space suits was given Vice President Hubert Humphrey at the Center July 13 by Richard Johnston, with microphone in hand.

Rendezvous

(Continued from Page 1)

REP's radar transponder. The radar system continuously computes distance and angles from the spacecraft to the Pod, and calculates the maneuvers necessary to effect rendezvous.

At five hours and 36 minutes after lift-off, if the mission goes nominally, the Gemini V should be closing on the REP just north of the Carnarvon, Australia tracking station.

Since there is no docking mechanism on the Pod, Gemini V will not physically dock with the Pod. The experiment will provide valuable training for Gemini VI and other rendezvous missions and will evaluate the rendezvous radar hardware to be used on the Agena target vehicle in these later missions.

The Rendezvous Evaluation Pod is built by the aerospace division of Westinghouse, Baltimore, Md., subcontractors to McDonnell for the Gemini rendezvous radar system.

Pegasus Meteoroid Punctured Sections May Be Returned To Earth By Astronaut

An engineering experiment with the ultimate aim of possibly returning to earth meteoroid punctured metal samples from long exposure in space has been added to NASA's Pegasus C/Saturn 10 project.

Small "coupons" or sub-panels of aluminum have been fastened to the Pegasus spacecraft with simple quick-detach fittings. The scheme is designed so that at some future date, if the experiment is deemed feasible, an astronaut could detach the panels and carry them back to earth.

NASA officials emphasize that no decision has been made for an astronaut to rendezvous and retrieve such samples. If the sub-panels are recovered from the space environment for laboratory study and analysis, they could provide actual samples of meteoroid hits. Knowing the nature and thickness of the material, and length of time exposed, scientists could learn much about the meteoroids, their effects and other factors of the space environment.

Although numerous experiments have been conducted in space, no materials punctured by meteoroids have been returned thus far.

The Pegasus experiment, managed by NASA's Marshall Space Flight Center, is designed to gather knowledge of the frequency and type of hits experienced in space, and radio the information back to earth. So far, Pegasus I and II have recorded numerous hits, while other, smaller satellites have added to the record.

In addition to installing the detachable sub-panels, the Pegasus C flight plan has been changed to a circular orbit about 332 miles above the earth at 28.9° inclination rather than an

elliptical orbit at 31° inclination. The change is to orbit Pegasus C closer to a nominal manned flight path.

The Marshall Center made up eight panels for the special purpose on Pegasus C, and then positioned them at comparable locations on each of the two wings of the spacecraft, four to each side. The frame of the spacecraft was coated with luminous paint to make it easier to recognize in orbit.

Luminous paint was also coated on the frames of the eight individual panels holding the detachable sub-panels.

There are six "coupons" on each panel, three to each side, for a total of 48 "coupons." They are made of aluminum in three thicknesses, as follows: 16

of them at .008 inch or 8 mils thick; 24 at 16 mils or .016 inch; and eight at 32 mils or .032 inches.

The sub-panels are attached at two relay points to the main panels and could be removed quickly. The 11 x 16 inch size is easy to carry and can be stored in compartments within the Gemini or Apollo spacecraft.

Two major program divisions of NASA have worked cooperatively on the Pegasus/Saturn project. The Pegasus project is the responsibility of the Office of Advanced Research and Technology, while the Saturn is a major project of the Office of Manned Space Flight.

The Pegasus C Launch is scheduled for July 30 at Cape Kennedy.

MSC Technical Symposium To Cover Apollo Studies

The Manned Spacecraft Center monthly Technical Symposium will be conducted at 6:15 p.m., next Monday in the Building 1 Auditorium by staff members of the Langley Research Center, on studies related to the Apollo program.

A security clearance at the confidential level is a requirement for admission to the MSC Technical Symposium. Contractors with permanent MSC badges are invited to attend this meeting.

Axel T. Mattson, liaison representative to MSC from Langley Research Center, will be chairman of the program.

On the program will be the following:

"Rendezvous Techniques" by Gene C. Moen, LRC.

"Simulation of LEM Dock-

ing" by Howard G. Hatch Jr., LRC.

"Antennas Under Ablation Materials" by William F. Grosswell, LRC.

"Contaminants From Manned Spacecraft Simulations" by E. Eugene Mason, LRC.

A showing of a Lunar Orbiter Film will also be held.

Preceding the meeting, a dinner will be held in the cafeteria from 4:45 to 6:15 p.m. The symposium is scheduled to last about two hours.

Astronauts Make Geology Field Trips To Alaska And Iceland

Two geological trips were made recently by MSC astronauts as part of their training.

The first trip was to a volcanic field in Alaska from June 27 to July 3. Making this trip were Astronauts Edwin E. Aldrin Jr., William A. Anders, Charles A. Bassett II, Alan L. Bean, Eugene A. Cernan, Roger B. Chaffee, R. Walter Cunningham, Russell L. Schweickart, David R. Scott, and Clifton C. Williams Jr.

July 12 through July 16 the same group except for Aldrin, who was replaced by Donn F. Eisele, made a geological trip to the volcanic wastelands of central Iceland. The area was selected because the desolate landscape probably comes as close to resembling the lunar surface as any place on earth. Both groups were accompanied by MSC geologists and members of the U.S. Geological Survey team.

Earth's Outer Edge Of Brightness

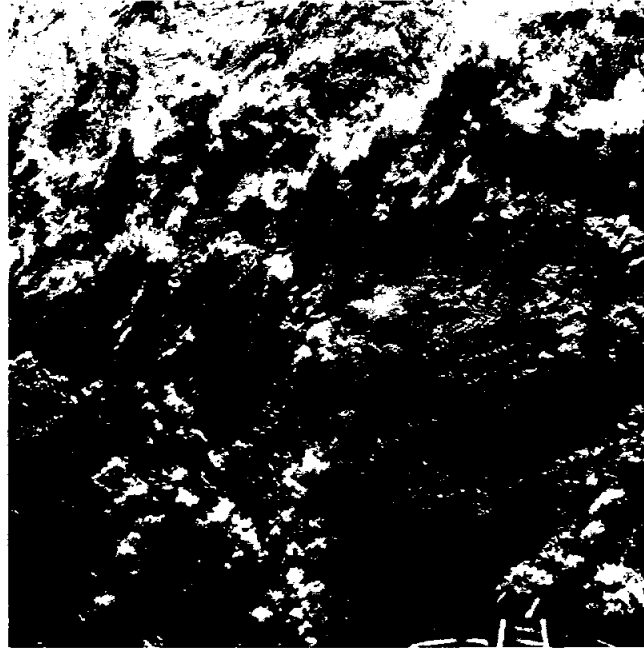


EARTH'S LIMB—This view of the Earth's limb was taken from the Gemini IV spacecraft as it approached the daylight side of the Earth. The photo of the Earth's outer edge of brightness was taken for later measurements to determine if the elevation of the limb can be a reliable aid in future manned space flight guidance and navigation sightings.

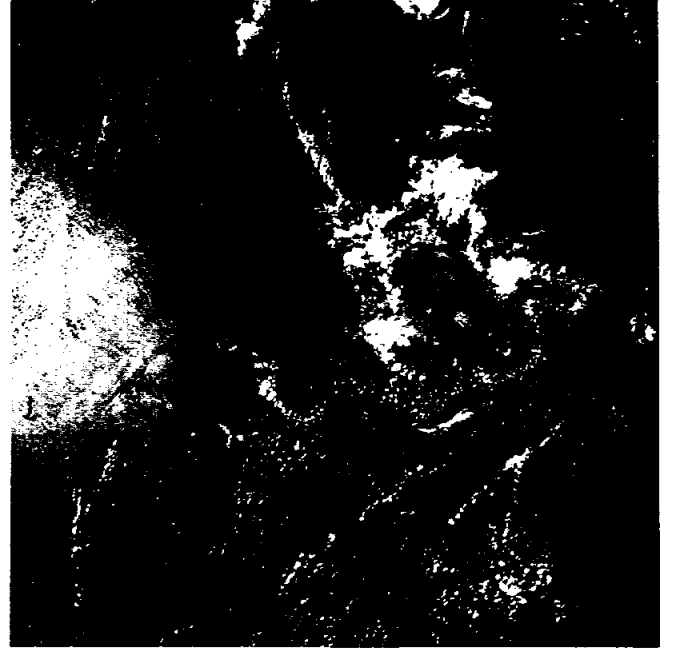
Gemini IV Earth Terrain Photos Contain Amazing Detail



ARABIAN PENINSULA—This view of the eastern tip of the Arabian Peninsula with the Gulf of Oman to the north was taken from the Gemini IV spacecraft. Sand dunes are visible at the lower left.



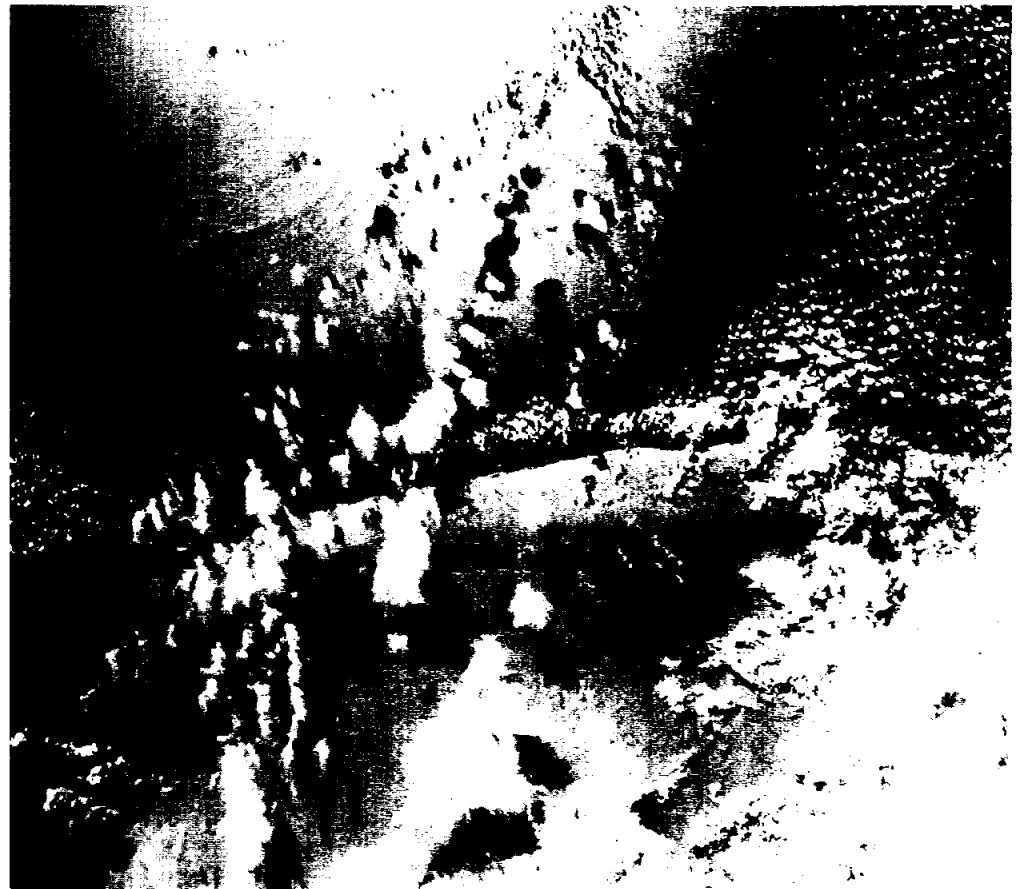
CUMULUS CLOUDS—The view of cumulus clouds over the ocean near sunset was taken on the June 3-7 flight of Gemini IV. The area has not as yet been identified.



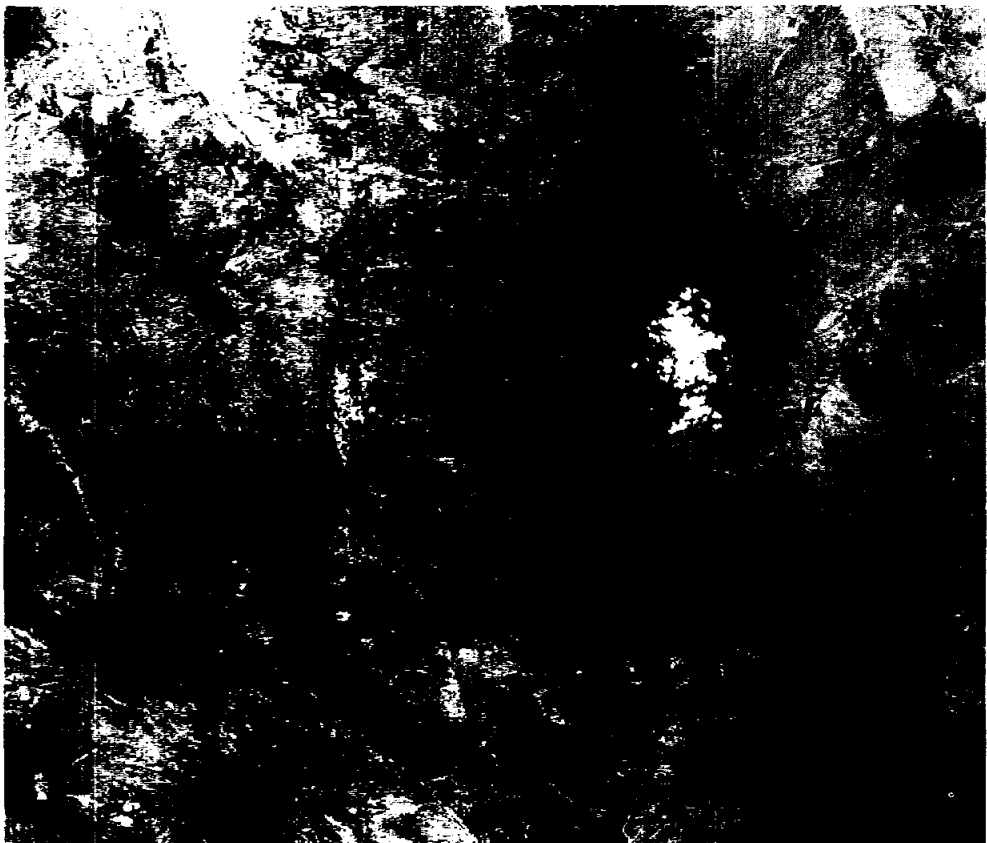
BAHAMA ISLAND—Acklin Island in the Bahama Islands is partially obscured by clouds. Light colored tones indicate shallow water. Shiny area is sun's reflection on the water.



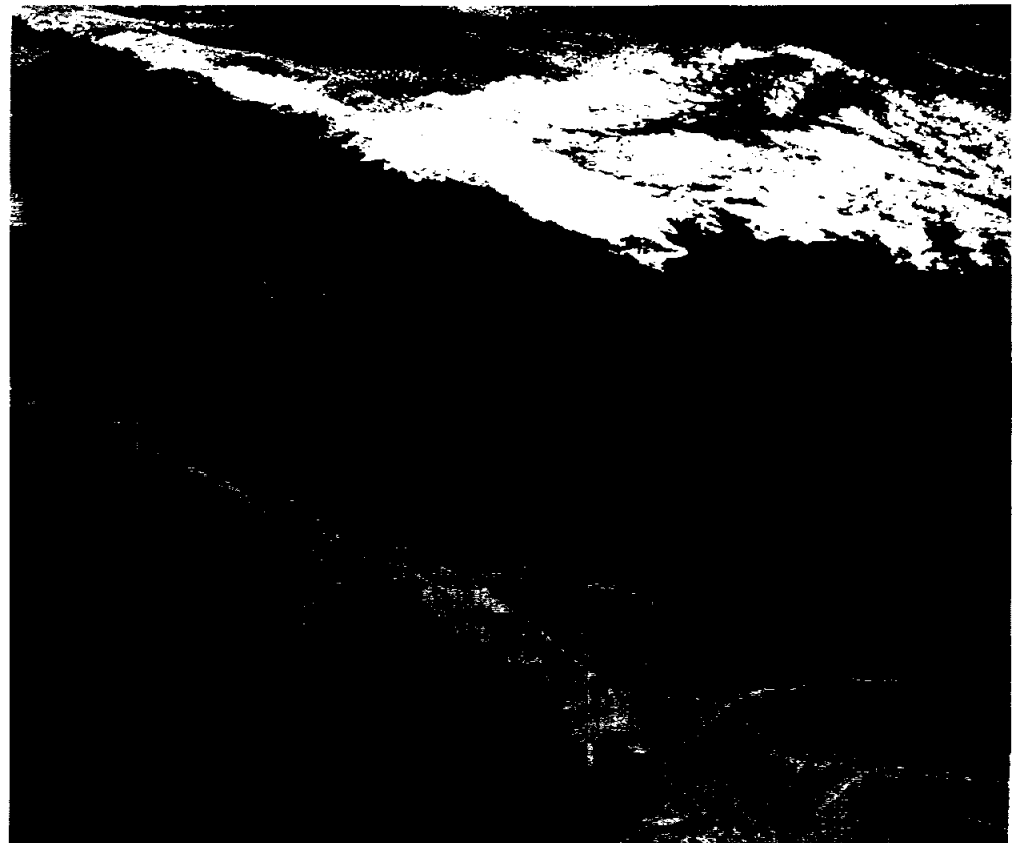
NILE DELTA—The Nile delta in Egypt and the Bohirat Qaron, a lake 148-feet below sea level is visible in this photo taken with the 70mm Hasselblad camera on the Gemini IV flight.



GREAT BAHAMA BANK—The edge of the Great Bahama Bank near the Bahama Islands is shown in the photo taken from the Gemini IV spacecraft. The light colored portion is shallow water and the dark is deep water.



S. E. ARIZONA—Clouds over Chiricahua Mountains, Willcox Flat, and a dry lake at upper left are shown in this photo of southeastern Arizona taken from the Gemini IV spacecraft during the June 3-7 flight.

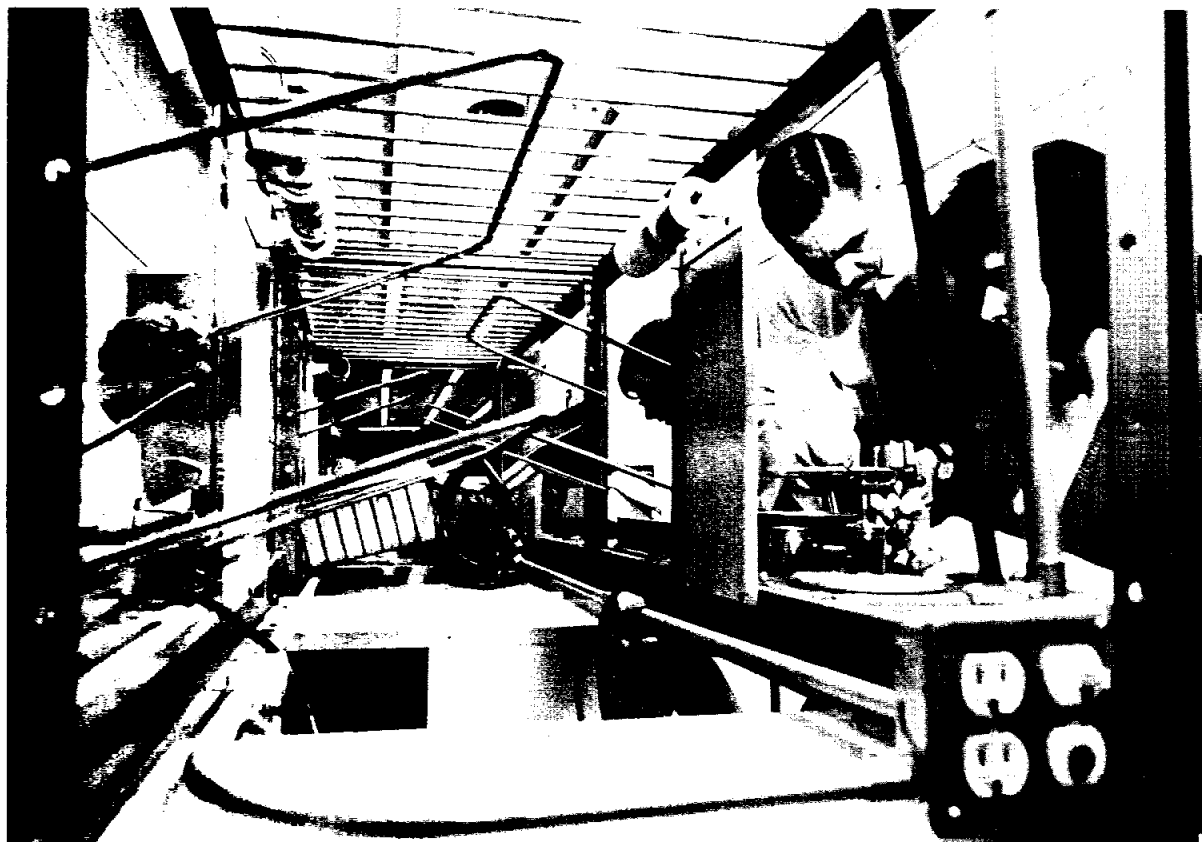


ARABIAN PLATEAU—The Hadramaut Plateau is shown in this photo taken from the Gemini IV spacecraft. The Wadi Hadramaut (ravine) is in the foreground and the Gulf of Aden is in the background to the south.

Spacelabs, Inc. Supplying Bioinstrumentation Equipment For



ACCEPTANCE TESTING—Gemini and Apollo testing racks are used by Spacelabs technicians for acceptance testing of bioinstrumentation equipment.



PRODUCTION LINE—Spacelab technicians solder electrodes and cable harness during fabrication and assembly of bioinstrumentation equipment.



PHYSIOLOGICAL SIGNAL CONDITIONERS—Preassembly of physiological signal conditioners is performed by a Spacelabs technician with an in-process inspection.

"Exploration of space is a logical and natural extension of man's exploratory nature," states James A. Reeves, co-founder of Spacelabs, Inc., whose Van Nuys, Calif., firm has dedicated itself to helping man conquer the space frontier by perfecting the art of monitoring physiological data systems.

In association with Ben Ettelson, Spacelabs has become, since its founding in 1957, one of the prime contractors in the Gemini Manned Spaceflight Program. It also has the National Aeronautics and Space Administration contract to provide the

entire bioinstrumentation system for Project Apollo. The firm is comprised of some 70 employees.

In helping man to conquer space, the Spacelabs team has developed systems for understanding man's reactions to space, recording them and applying the principles to further research and development to solve the problems concerning the safety and welfare of the man in space.

Spacelabs, Inc., has served NASA, the military and industry in solving difficult instrumentation problems where high performance and reliability must be combined with small size and weight.

Items produced by Spacelabs range from miniature transducers and signal conditioners to complete analog and digital data systems. Application of Spacelabs' instrumentation include critical patient monitors, test chamber instrumentation and fully qualified flight hardware for the major manned space flight programs.

Among the programs Spacelabs has completed for the space program is development of a linear pneumotachometer for measuring the respiration rate and depth of a subject wearing a full pressure suit in an aerospace environment and converting this data into electrical signals; study and development of transducers for voice communication in aerospace vehicles; design and development of a system for continuously monitoring a crew member's blood pressure within a hypersonic vehicle.

Programs also include the design of a system for maintaining sanitary conditions within an aerospace vehicle on long duration space flights; design of a system for preserving frozen foods without use of electric power for up to six men on a one month space mission.

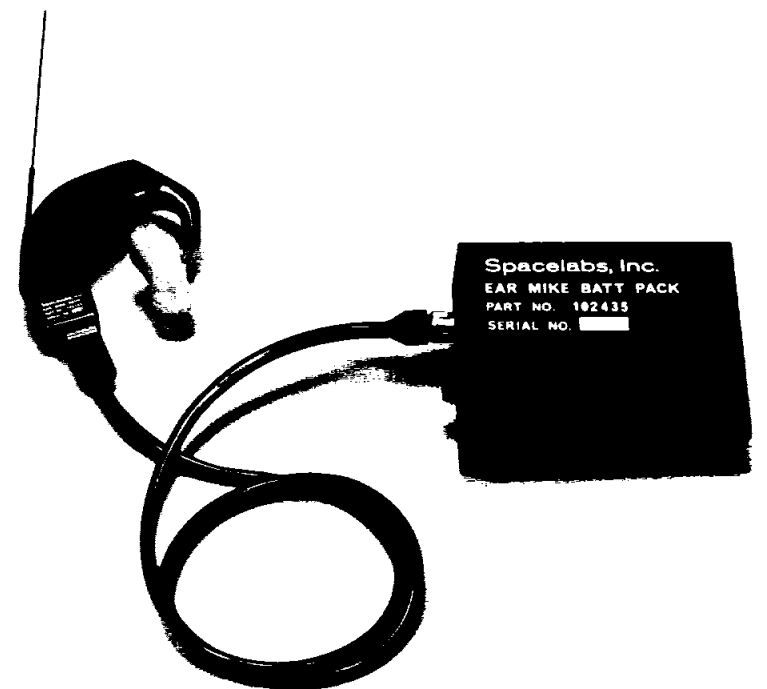


BEN ETTELSON
President, Spacelabs, Inc.



HERBERT SEAL
Spacelabs, Inc., chief engineer and Apollo and Gemini bioinstrumentation program manager.

EDITOR'S NOTE: This is the forty-fifth in a series of articles designed to acquaint MSC personnel with the Center's industrial family, the contractors who make MSC spacecraft, their launch vehicles and associated equipment. The material on these two pages was furnished by Spacelabs, Inc.



EAR MICROPHONE—A radio transmitter-receiver designed to be tucked away in the human ear and sensitive enough to pick up the voice signals spoken by the wearer and transmit them over short distances is being developed for NASA by Spacelabs, Inc.

Space News ROUNDUP!

MANNED SPACECRAFT CENTER, HOUSTON, TEXAS

EMPLOYEE NEWS

Tournament Awards Won By Boat And Water Ski Club

Members of the Boat and Water Ski Club at MSC took part in the July 4 Novice Water Ski Tournament at Nassau Bay and "walked off" with awards in 14 of the events.

The 14 awards were taken by eight club members that entered the tournament. First place ribbons were won in Junior Girls' Slalom and Trick Riding, Women's Slalom and Trick Riding, Intermediate Men's Tricks,

Senior Women's Slalom, and Senior Men's Tricks.

Second place was won in Junior Boy's Trick riding, Intermediate Men's Slalom, and Senior Men's Slalom. Club members also won third place in Junior Boy's Slalom, Intermediate Men's Slalom, Senior Men's Slalom, and Senior Men's Jumping.

Another novice tournament was to have been held at Port Haven Marina on July 18.

Anyone interested in skiing with the club in tournament events should call Bill Drewes at Ext. 5486, or Ben Hood at Ext. 5566.

The club was to have held a swimming party and dinner meeting last night.

MSC Golfers Offered Lessons At Ellington

In response to the support of MSC golfers, and in particular the Golf Association at the Center, of the Ellington Golf Club, Jim Owen, club pro, will offer special lessons to MSC employees and their families during the month of August.

The lessons will be given at the Ellington Golf Club and will be four lessons for \$1.

Lessons will be scheduled as follows:

Children 8 to 17 may take lessons each Wednesday morning.

Lessons for working girls will be held after 5:30 p.m. on Tuesdays, and wives may take golf lessons each Tuesday morning.

For reservations and times, contact Jim Owens at HU 7-1400, Ext. 496.

EAA Plans For Theatre, Chorus Are Called Off

Plans by the MSC Employees Activity Association (EAA) to organize a little theatre, chorus and orchestra group have been discontinued it was announced by Philip T. Hamburger, chairman, EAA.

The decision was influenced by the knowledge that establishment of such groups at MSC would compete with talent and spectators of similar groups already established or being organized in League City, Baytown, Pasadena and other sur-

MSC-EAFB SOFTBALL

Standings as of July 11

| Fast Pitch | | | | |
|--------------|----|----|------|-------|
| TEAM | W. | L. | Pct. | G.B. |
| Lone Stars | 9 | 1 | 900 | — |
| Rams | 8 | 1 | 890 | 1/2 |
| CG-Choppers | 8 | 1 | 890 | 1/2 |
| 2578th AB SQ | 8 | 2 | 800 | 1 |
| Colt 38's | 7 | 3 | 700 | 2 |
| Weather | 6 | 3 | 667 | 2 1/2 |
| IBM | 6 | 4 | 600 | 3 |
| FCD | 5 | 4 | 556 | 3 1/2 |
| Comm-SQDN | 4 | 5 | 445 | 4 1/2 |
| ID | 3 | 6 | 333 | 5 1/2 |
| Wolfs | 3 | 7 | 300 | 6 |
| LoBos | 3 | 7 | 300 | 6 |
| Lockheed | 2 | 8 | 200 | 7 |
| Hustlers | 2 | 8 | 200 | 7 |
| Firemen | 1 | 8 | 111 | 7 1/2 |
| Rag Mops | 1 | 8 | 111 | 7 1/2 |

| Slow Pitch | | | | |
|-------------|-------|-------|------|-------|
| TEAM | W. | L. | Pct. | G.B. |
| Animals | 10 | 0 | 1000 | — |
| Hustlers | 8 | 1 | 890 | 1 1/2 |
| MPAD-RAB | 8 | 2 | 800 | 2 |
| Mis-Fits | 7 | 2 | 778 | 2 1/2 |
| Mets | 5 | 3 | 625 | 4 |
| CSD | 6 | 4 | 600 | 4 |
| 8-Balls | 6 | 4 | 600 | 4 |
| RMD-Plus | 5 | 5 | 500 | 5 |
| Machinists | 5 | 5 | 500 | 5 |
| Fabricators | 4 | 6 | 400 | 6 |
| LRD | 3 1/2 | 5 1/2 | 389 | 6 |
| Odds-Ends | 2 | 6 | 250 | 7 |
| Virginians | 2 | 7 | 222 | 7 1/2 |
| Moonrakers | 2 | 7 | 222 | 7 1/2 |
| Lunartechs | 1 | 9 | 100 | 9 |
| USCG(H) | 1/2 | 8 1/2 | 056 | 9 |

rounding communities, Hamburger stated.

He said that EAA tries to provide a recreational program for employees not otherwise available in the civilian community. Its purpose is not to compete with such programs.

Hamburger expressed his appreciation for the interest shown in organizing such groups at MSC, and at the same time emphasized that Dr. Robert R. Gilruth, director of MSC, and other management officials were quite interested in having MSC employees participate with and support local entertainment groups such as the Clear Creek Country Theatre and other amateur organizations of talent.



PERFORMANCE AWARD—Donald K. Slayton (left), assistant director for Flight Crew Operations, presents a Sustained Superior Performance Award to Dean F. Grimm. Grimm is a member of the Spacecraft Operations Branch at MSC.

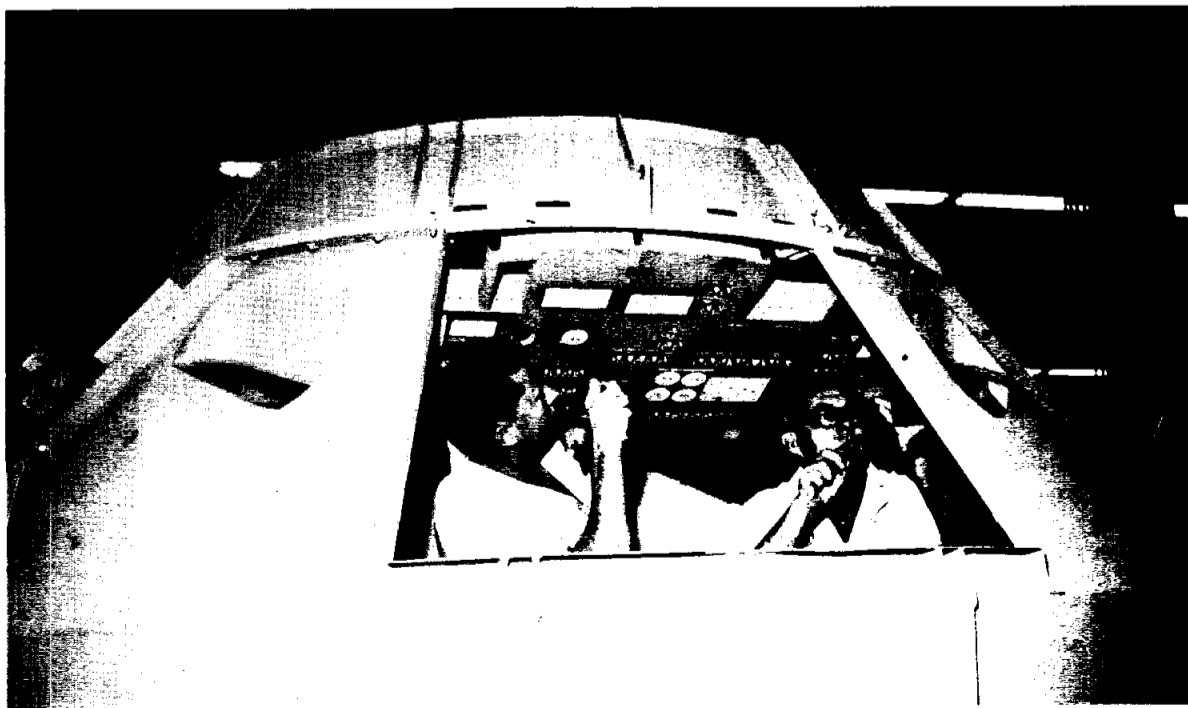


CRANE OPERATOR—Hearld Whitmer, a spacecraft crane operator with the Technical Services Division, is shown at Lunar Topographical Simulation Area operating the crane during a test with the Six Degree of Freedom Simulator.

Fifteen Year Award



SERVICE AWARD—John R. Mullins (left), Space System Quality Control Representative, Flight Safety Office, is the recipient of the 15-Year Service Award. The presentation was made by F. J. Bailey Jr, chief, Flight Safety Office.



APOLLO TRAINER—Two employees of the Sheetmetal and Welding Branch, Technical Services Division, are shown here installing equipment in an Apollo "Zero G" mockup trainer located at MSC. The two men are William Riddlehoover (left) and Leon W. Galler (right), shown inside the shell of the Apollo trainer as they tighten the screws holding the control panel instruments.

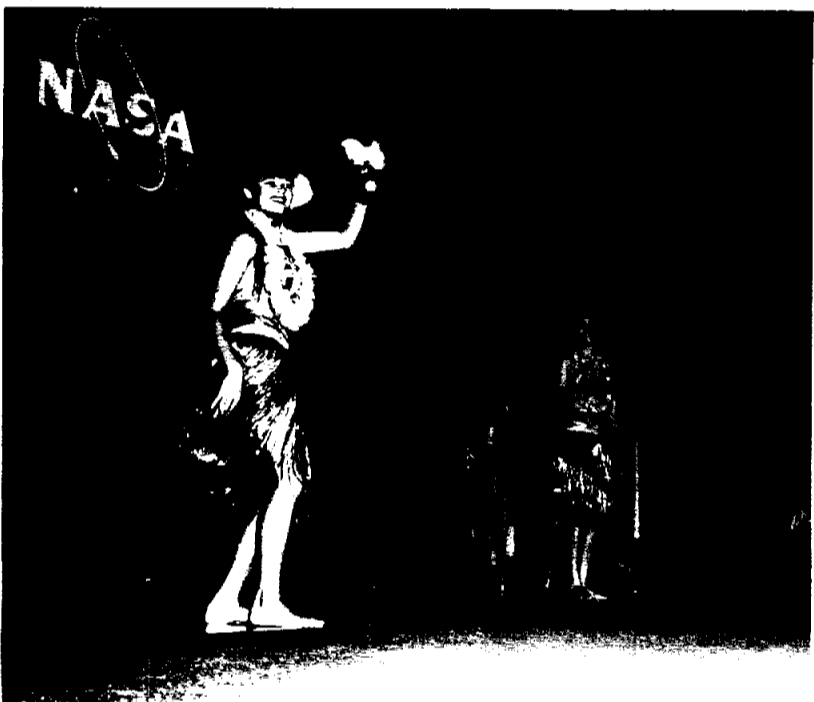
Freeman Libraries Benefit From 'Vaudeville Revisited '65' Performances



OPENING NIGHT—Philip T. Hamburger, president, Employees Activities Association, presents a dozen red roses to Juanita Bower, producer-director of "Vaudeville Revisited '65," as he congratulates her on a job well done.



GRAND FINALE—All the performers of "Vaudeville Revisited '65" are shown here during the "grand finale." The variety show was held July 16, 17, and 18 to benefit the Theodore Freeman libraries.



HULA DANCERS—Debbie York (left) and Frances Lynn Wright, nieces of Bobbie Wright, USAF Liaison Office, performed an authentic Hawaiian hula dance for audiences attending "Vaudeville Revisited '65."



BARBER SHOP QUARTET—This barber shop quartet was one of 27 acts presented at "Vaudeville Revisited '65." Shown are (l. to r.) Mike Cox, Lloyd Erickson, Jim Carter, and Max Simms as they harmonize their song for their performance in the benefit variety show.

Safety Office Says Turn Off Coffee At End Of Day

As a reminder to Manned Spacecraft Center employees that work in areas that maintain coffee urns, etc., the Safety Office cited the following example which was extracted from the NFPA Fire Journal, March 1965.

"When workers in a San Francisco seven-story fire-resistant office building left for the day, the occupants of a sixth-story office failed to disconnect a coffepot. The pot overheated and ignited nearby combustibles. Fire spread throughout the combustible interior of the office before discovery and when fire fighters arrived, the fire had spread to wood trim, the combustible acoustical ceiling in the hallway, and had burned through the wooden doors of two adjoining offices. Fire damage was severe in the sixth story and several stories below suffered water damage."

This example is why the Safety Office requires portable electrical appliances containing heating elements to be disconnected at the end of each work day.



FOLK SINGER—Dave Gluck sang a couple of folk songs at "Vaudeville Revisited '65." The benefit variety show was held in Building 1 Auditorium July 16, 17, and 18.



SOUND OF MUSIC—The daughters of Bill Lindsey, Resources Management Division, sang and danced a couple of numbers from "The Sound of Music" at performances of "Vaudeville Revisited '65" July 16, 17, and 18. They are (l. to r.) Virginia, Susan, and Elizabeth Lindsey.



VOCALIST — Betty Midgett displayed her talent as a songstress at the benefit performances of "Vaudeville Revisited '65." The proceeds from the variety show were given to the Theodore Freeman libraries.

For Gemini And Apollo Space Flights

In addition to determination of biomedical and human factors, measurements must be made aboard a space station to assure adequate evaluation of the astronaut's health and performance in space.

Also development of a simplified method of using body impedance change occurring during respiration to measure respiration rate and volume (improved impedance pneumograph).

Also completed is a seven channel biotelemetry system to be worn by astronauts, capable of telemetering body temperature, respiration rate and depth, blood pressure, electromyogram, electrocardiogram, electroencephalogram and two-way voice communications.

Presently concentrating its sights on the Apollo program, Spacelabs is preparing an elec-

trocardiogram, D. C. to DC converter, electrodes, biomedical harness and bioinstrumentation to measure skin temperature.

As one of the contractors for the Gemini Manned Spaceflight Program, Spacelabs, Inc., manufactured and delivered prototype quantities of miniaturized signal conditioners to measure oral temperature, respiration and electrograms. This sophisticated circuitry was worn by the Astronauts James A. McDivitt and Edward H. White II on their historic Gemini IV flight.

Expanding into the field of medical application for their space devices, Spacelabs has developed a physiological telemetry system capable of transmitting and receiving six channels of physiological data from test subjects in a space cabin simulator.

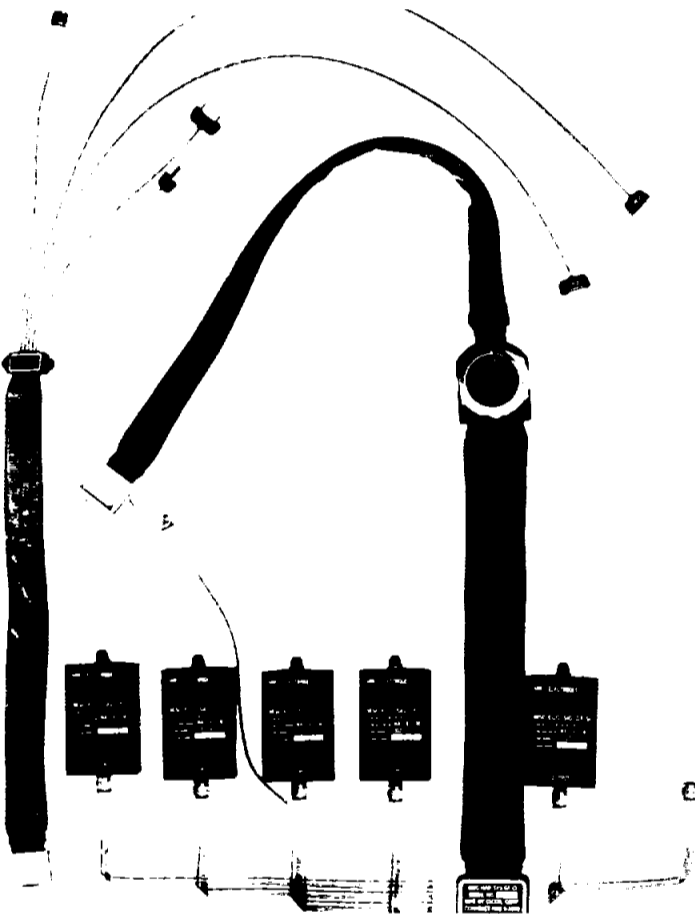
The firm has also developed for the U.S. Air Force School of Aerospace Medicine at Brooks AFB, Texas, a family of standardized physiological telemetry modules including sensors, amplifiers, voltage-controlled oscillators, transmitters, discriminators and receivers. Known as the Model 130 BIOTEL, this system offers the medical research scientists an advanced tool of proven reliability for telemetering a variety of physiological data.

From its three locations, two in Van Nuys and one at Edwards Air Force Base, Spacelabs, Inc., is actively seeking application of technical findings from the space program to other areas.

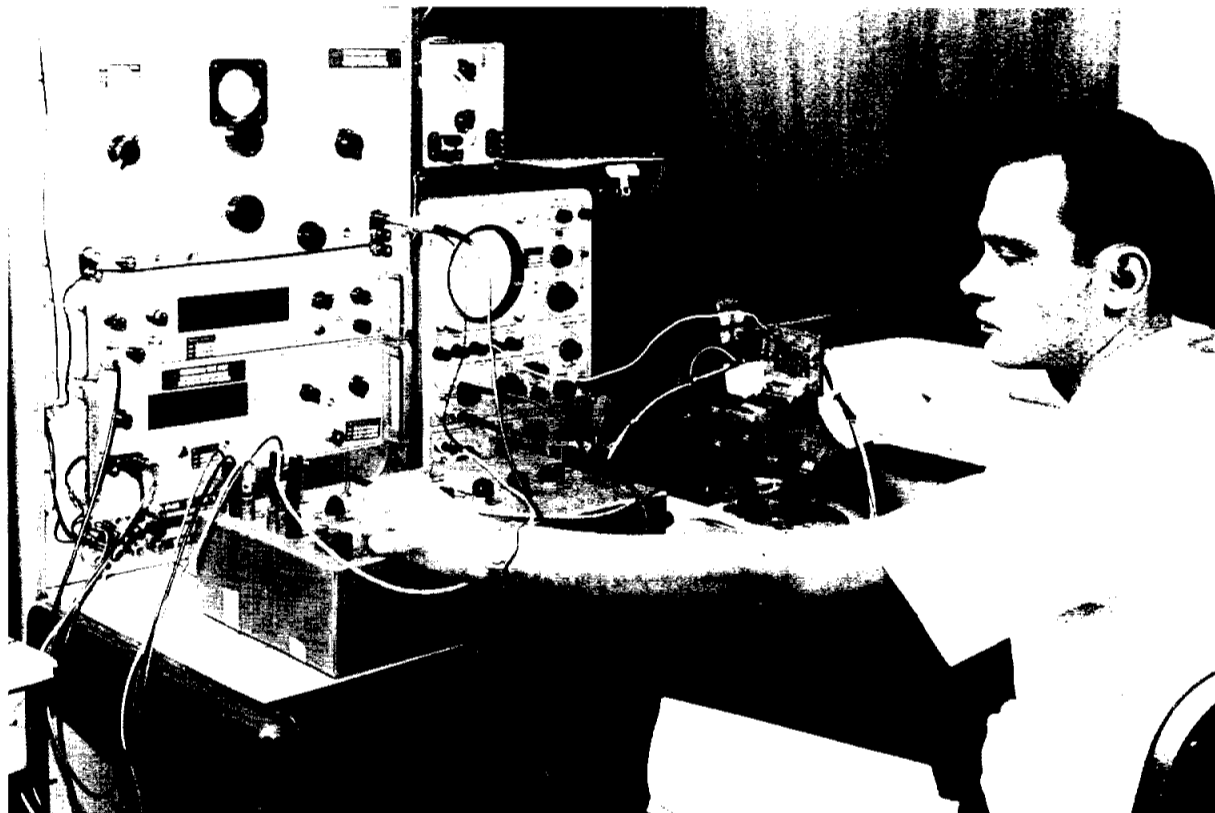
"We are helping sow the seeds of progress," states Reeves. "Man always has had the feeling of wonder what is over that next hill. And in all explorations measures must be taken to ensure his safety in new surroundings." This is the basic philosophy of Spacelabs.



ECG CONDITIONERS—Technicians weld Apollo and Gemini electrocardiogram (ECG) conditioners.



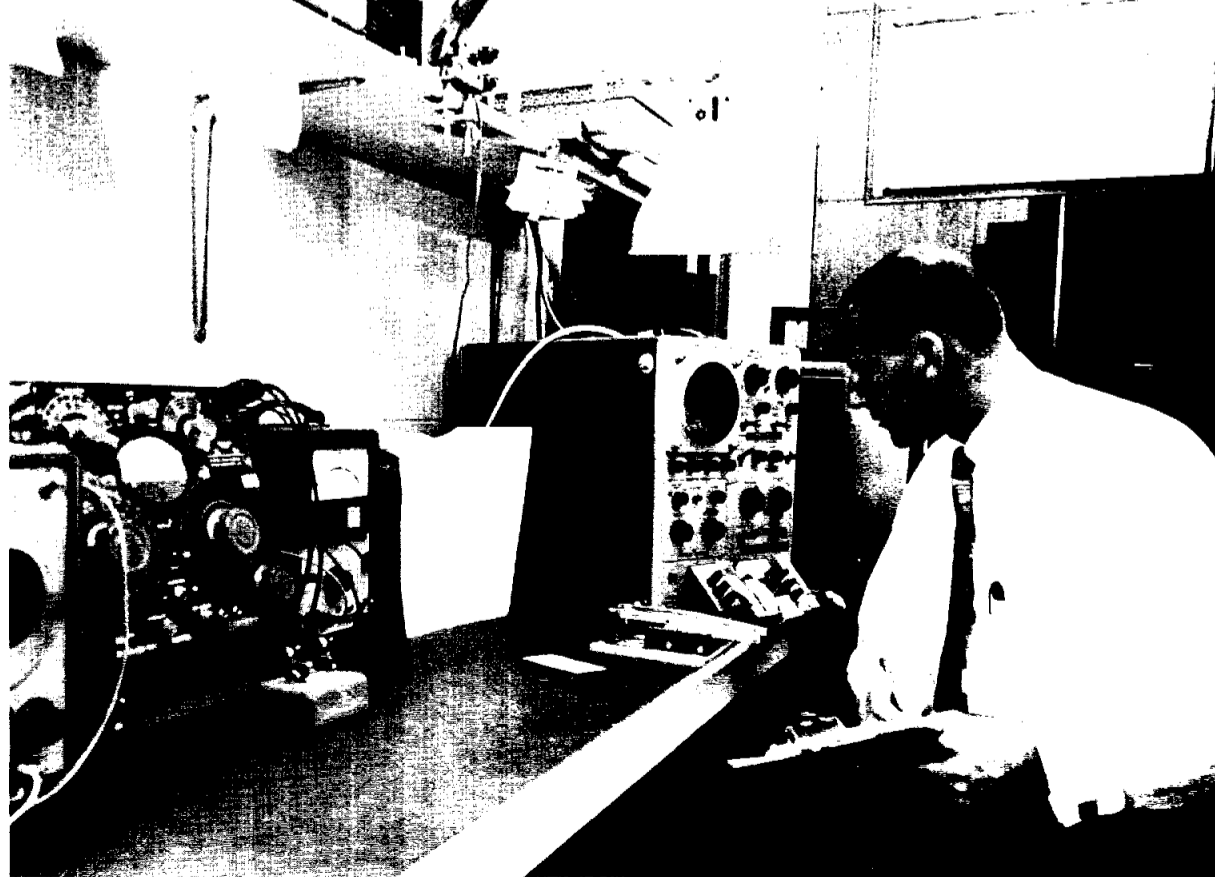
COMMON TRUNK CABLE—All sensors and signal conditioners are connected to a common trunk cable. The large connector in the center of the trunk provides a breakout point from the space suit.



TESTING—Select testing of signal conditioners is performed by a Spacelabs technician.



TRANSISTOR INSTALLATION—Chip transistors are installed in a bioinstrumentation unit by a Spacelabs technician.



TRANSISTOR CHECK—John Adams, Spacelabs manufacturing manager, checks chip transistors.

The SPACE NEWS ROUNDUP, an official publication of the Manned Spacecraft Center, National Aeronautics and Space Administration, Houston, Texas, is published for MSC personnel by the Public Affairs Office.

Director Dr. Robert R. Gilruth
Public Affairs Officer Paul Haney
Editor Milton E. Reim
Staff Photographer A. "Pat" Patnesky

Welcome Aboard

During the last reporting period, 151 new employees joined the Manned Spacecraft Center.

Center Medical Programs Office: John J. Droscher and Kenneth N. Beers.

Center Medical Office: Michael K. Armstrong.

Public Affairs Office: Dianna C. Jones, Frank M. MacKeith, Gary M. Coley, and Linda S. Cordon.

Administrative Services Division: Dona J. Dansby, Bill Green, Robert L. Wilbanks, and Theodis Wyatt.

Procurement and Contracts Division: Evan E. Anderson, Thomas L. Cline, Jerry D. Franklin, Thomas R. McPhillips, William L. Ordone, Robert E. Sternberg, Linda C. Kent, and Rosie Lewis.

Technical Services Division: Jaime C. Acosta, Robert C. Arndt, Wesley A. Brown, Elijah Corley III, Antwine Jefferson III, Tommy R. Cunningham, George White, and Hampton P. Mitchell.

Photographic Technology

Laboratory: Walter D. Hanby, William E. Morris, Louis A. Nabors, James E. Snowden, and Carl J. Sanders.

Engineering Division: Robert F. Lowenstein, Ashland O. Brown, Windell D. Norris, Dan Davis, and Charles J. Whitman.

Management Services Division: Edward S. Flash, Shirley P. Jacobs, and Andris G. Priede.

Personnel Division: Ann K. Coleman, Thomas G. King, and Linda Cantu.

Resources Management Division: Henry W. Bowman, David M. Hamernick, Howard G. Jensen, Phyllis M. Thomas, Ilze A. Vaivods, Rosalie G. Black, Manuela Tellez, and Martin S. Wishnatsky.

Flight Crew Support Division: Lynn A. Carpenter, Edward C. Murphy, Joseph C. Salvaggio, Robert L. Shick, Victor L. Taylor, and Roy A. Westerberg.

Assistant Director for Engineering and Development: Gladys M. Johns, Waynel C. Lanham, Reyes, J. Galvan, Gwendolyn E. Pierre, Charles



KATHRYN C. WALKER

R. Smith, and Lee A. Tisdell.

Information Systems Division: Edward M. Buckner, Harry S. Burns, Joseph B. Castillo, and John S. Gorman.

Crew Systems Division: Richard B. Bannerot, James L. Deslonde, Max Fox, Sharon A. Fair, Philip G. Hoffman, Clifford J. Kingsmill, Michael J. Landay, Jacqueline E. McCauley, Harry Reischer, Norman E. Smith, Robert G. Stevenson, Van W. Teeters, and Robert W. Thomas.

Computation and Analysis Division: Roy L. Fultun, Julia C. Hsia, Michael Minkoff, Sallie S. Nelson, and Donald C. Wells.

Instrumentation and Electronic Systems Division: Matthew S. Blankton, Mac H. Clark, William R. Fisher, William R. Matkin, Richard D. Nathan, and

(Continued on Page 7)

MSC PERSONALITY

Personnel Management At MSC Is Kathryn C. Walker's Specialty

Kathryn C. Walker, personnel management specialist, in the Manned Spacecraft Center, Personnel Division is one of the more knowledgeable persons here at the Center when it comes to anything relative to the civilian personnel program.

In her present capacity, she provides the personnel division officer and his staff with expert knowledge and advice in the interpretation and application of laws, rules, and regulations, policies, procedures, etc., as they relate to the administration of the MSC civilian personnel program.

Some of her other duties include establishing internal audit methods and procedures; devising reporting systems and forms to provide for program analysis and evaluation; and implementing and following up on inspection recommendations made by higher echelons in the personnel area.

Twenty-two years in the personnel program area began for Kathryn in 1943 when she began working for civil service in the personnel and payroll division of the Gadsden, Ala. Air Force Depot. She spent five years at that installation working for the Army Air Corps as chief of the payroll office.

As many military bases did in the post war years, the Gadsden base was closed and Kathryn pursued her payroll and personnel duties from 1948-49 at the Mobile, Ala. Material Command Base, and then from 1949 to 1951 she worked in the personnel office of the Memphis, Tenn. Air Force Depot.

Her place of birth having been Keener, Ala., near Gadsden, she returned to Gadsden when the Gadsden Air Force base was reactivated in 1951 for the Korean War. She returned in the capacity of chief of the payroll office. In 1953 she entered into personnel administrative work and became chief of the administration office in the Gadsden Air Force Base personnel division.

When the Air Force Jupiter liaison office was opened in the Redstone Arsenal, Huntsville, Ala., in 1958, Kathryn became a part of that office handling the personnel affairs for the unit. Six months later she accepted a position as chief of the administrative branch of the personnel division at the Army Ballistic Missile Agency at the Huntsville installation.

In 1960 when the ABMA split to supply people for the newly formed Marshall Space Flight Center, she stayed with ABMA as a personnel management specialist.

In October 1961, a short time before the Space Task Group became the Manned Spacecraft Center and the move was made to Houston, Kathryn joined NASA at Langley as a personnel management specialist, a job she still performs for MSC.

One of the honors accorded her for her outstanding performance as a civil service employee was being a nominee for the Federal Women's Award in 1960.

Kathryn's early schooling was at Etowah, Ala. High School and Snead Junior College in Boaz, Ala. She presently resides in LaPorte, Texas.

When not working at the Center she devotes her time to such duties as being president of the Wesleyan Service Guild at the LaPorte Methodist Church and serving as an elected steward and member of that church's official board.

Aside from these duties she said her favorite pastimes include reading and needlework.

SPACE QUOTES

HUMAN REACTIONS STUDIED IN SPACE EFFORT. Dr. George E. Mueller, associate administrator for Manned Space Flight, Space Medicine Branch, Aerospace Medical Association, New York, N. Y., April 28, 1965.

"One of the greatest contributions of the national space effort may well be an increasing understanding of the dynamics of the human system as a whole. Four conditions lead us toward this conclusion.

"First, healthy human beings are now being studied over a long period of time and quantitative data is being obtained on reactions of the human system to the environmental factors encountered in a stressful situation.

"Second, biotechnology is making it possible to measure man's total reactions as a dynamic organism. As the sophistication of instrumentation continues to improve, the rate of change of living cells can be measured with increasing precision and comprehensiveness.

"Third, in the space environment the human organism has six degrees of freedom of motion, free from external forces. In this environment, it will be possible to validate mathematical models that will provide new standards of man's responses to dynamic situations. With these standards as guides against which to measure the pattern of human system function on earth, it may be possible to augment significantly the ability of medicine to prognostic the symptoms before they occur.

"Finally, the increased interaction between the physical and biological sciences should advance understanding in such cases as molecular biology, mathematical biology, neurophysiology, bionics and electrobiology."

On The Lighter Side Secretaries, Better Check Your Typewriter!

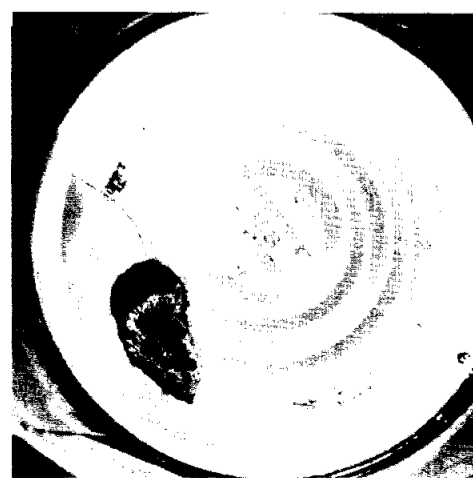
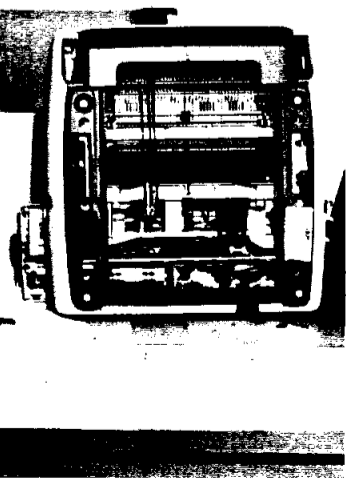
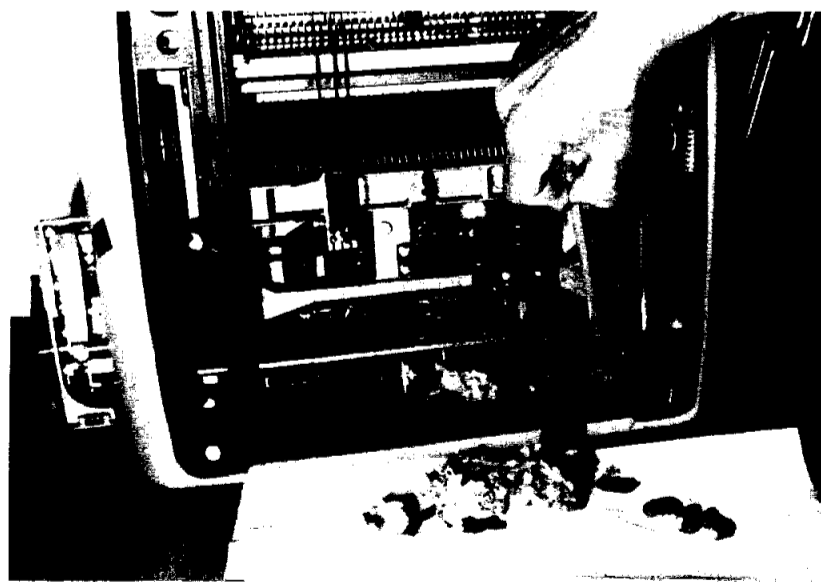
Secretaries who have ever found a mouse or considered the possibility of finding a mouse in their typewriter, can appreciate the predicament of Dolores Archuleta, a secretary in the Quality Assurance Office at MSC's White Sands Operations.

Dolores didn't find a mouse, she found five mice — four babies and one adult female — in a cotton-and-paper nest inside her electric typewriter when it was delivered to her desk from ware-

house storage.

The mice and nest were removed with dispatch and the scene returned to normal.

This should be incentive enough for secretaries. "A busy typewriter makes a poor home for mice."



Clear Lake Area Has Colorful Past Of Pirates, Tragedy And Heroism

(EDITOR'S NOTE: This interesting bit of local area Texas history was compiled by the Historical Branch of the Public Affairs Office for Vice President Hubert H. Humphrey, who was a visitor at the Center last week.)

Memorable events left their imprints on the shores of Clear Lake and of other nearby waters for more than four centuries before the Manned Spacecraft Center and Gemini Control came to the area.

Just 14 miles north of Clear Lake is the site of the home of

Lorenzo de Zavala, signer of the Texas Declaration of Independence and vice president of the Republic of Texas.

Legends of pirates' treasure buried on the shores of Clear Lake abound in the written and unwritten tales of the exploits of Jean Laffitte, the colorful privateer who became a minor American hero at the Battle of New Orleans. Laffitte maintained headquarters on Galveston Island until the year 1820, when—according to legend—he and his band of smugglers and cutthroats buried four chests filled with gold on the north shore of Clear

Lake, left Texas forever and moved their base to Yucatan.

Treasure hunters have made many excavations along the north shore not far from the homes of some of the astronauts, but no pirate treasure has ever been found.

The first European to set foot in the Clear Lake area was the explorer Alvar Nunez Cabeza de Vaca, who, with a few other Spaniards, survived a shipwreck off Galveston Island in November of 1528.

Cabeza de Vaca was enslaved by the Galveston Indians, the fierce, six-foot, cannibal Kronks. But after a year he escaped to the Clear Lake country and became a trader and medicine man along the friendly Houston-area Indians, the Orcoquisacs.

In those days the Galveston Indians invaded the mainland each spring to kill and eat the Houston Indians. After six years in the vicinity of Clear Lake without getting into a Kronk stew, Cabeza de Vaca made his way to the City of Mexico. There he issued a statement saying that, as far as he was concerned, the Indians could keep the Galveston-Houston-Clear Lake country.

At Bolivar Point, 23 miles southeast of Clear Lake, Jane Long, from Natchez, Miss., one of the great heroines of all time, earned the title "Mother of Texas" by holding a frontier fort against the cannibal Indians during the dreadfully severe winter of 1821 (it was so cold that Clear Lake froze, and Jane saw a bear walking on the ice of Galveston Bay). While fighting off the savages with cannon fire, with only a Negro woman companion and a child and a dog for company, Mrs. Long gave birth to the first child of English descent born in Texas. And she lived to become the most glamorous citizen of the Lone Star Republic.

Just 13 miles north of Clear Lake, on April 21, 1836, less than 800 Angry Texans took an empire away from one of the most arrogant dictators ever to set foot in the Americas. The Texans won almost one-third of the present area of the contiguous states of the United States—nearly a million square miles of territory—in just 18 minutes of bitter fighting, out on the prairie where Buffalo Bayou empties into the San Jacinto River, or the river empties into the bayou—nobody has ever figured out which.

Sam Houston, commanding the Texas Army, could have joined the battle on the 20th, but he deliberately let the dictator bring up 500 reinforcements, making it less than 800 Texans against 1500 of the enemy. A politician asked Old Sam why he waited until he was outnumbered almost two to one before he tore into Gen. Antonio Lopez de Santa Anna.

"Why make two bites of a cherry?" replied Houston.

Houston's official report said the Texans lost two men killed and 23 wounded. The enemy lost

630 killed and 208 wounded. Among the prisoners was the dictator himself. Texas was free to become an independent member of the world community of nations.

Then there was the Battle of Galveston, on New Year's Day, 1863. The United States troops had occupied Galveston since Christmas of 1862, but Gen. John B. Magruder, commanding the Confederate district of Texas, New Mexico and Arizona, with headquarters in Houston, led a land-and-sea attack on Galveston on the night of December 31. Infantry and artillery from Houston were loaded onto two "cottonclad" bayou steamboats—armored with bullet-stopping bales of cotton—while another Houston contingent skirted Clear Lake and advanced over the island causeway.

The battle began just before sunrise on January 1. A United States Navy squadron joined in. With brother fighting against brother and father against son, the Rebels captured the Federal flagship and a Union gunboat. The Northern land forces, mostly from the 42nd Massachusetts Infantry, surrendered, and Galveston remained in Confederate hands until the end of the war.

One of the first Virginians to roam the area around Clear Lake was a Col. Joe Phillips from Hampton. He was commander of the Fourth Texas Mounted Rifle Regiment at Galveston in

1862-63 during the Civil War and also took part in the battle of Galveston. (Others have followed, including those that came to Texas in early MSC days of 1962 a hundred years later.)

The Great Storm of Galveston, which on Sept. 8, 1900, destroyed the city and killed more than 5000 people, also indirectly produced municipal reforms that resulted in the first commission form of city government. Incidentally, Houston was the second American city to adopt the commission system.

As late as 1961 it could have been said that the shores of Clear Lake—although free from savage Indians—were almost as wild as in the days of Cabeza de Vaca. For in the soon-to-be-published NASA history of Project Mercury, a contract employee at the Manned Spacecraft Center reports that on an October 1961 inspection tour of the MSC site he found cowboys driving herds of range cattle to new pasture, a crew of surveyors from the Army Corps of Engineers mapping the prairie and fighting snakes, and a lone wolf hunter with the carcass of a freshly slain wolf. The hunter said he had just seen several wild turkeys, a fox and many deer tracks, and he added:

"Reckon this'll be my last wolf hunt. These space people ain't going to want anybody shooting rifles around here. I got a good mind to move to West Texas. This country's getting too civilized."

Space News Of Five Years Ago

JULY 23, 1960 — Mercury Spacecraft No. 2 was delivered to Cape Canaveral for the Mercury Redstone 1-A (MR-1A) mission.

JULY 29, 1960 — Project Apollo, advanced manned spacecraft program, was first announced at NASA's Industry Conference.

JULY 29, 1960 — Mercury-Atlas (MA-1) was launched from Cape Canaveral with mission objectives being to check the integrity of the spacecraft structures and afterbody shingles for a reentry associated with a critical abort and to evaluate the open-loop performance of the Atlas abort-sensing instrumentation system. The spacecraft contained no escape system and no test subject. Standard posigrade rockets were used to separate the spacecraft from the Atlas, but the retrorockets were dummies. About 59 seconds after launch, the flight was terminated because of a launch vehicle and

adapter structural failure. The spacecraft was destroyed upon impact with the water because the recovery system was not designed to actuate under the imposed flight conditions. Later most of the spacecraft, the booster engines, and the liquid oxygen vent valve were recovered from the ocean floor. Since none of the primary flight objectives was achieved, Mercury Atlas 2 (MA-2) was planned to fulfill the mission.

DURING JULY 1960 — Manufacture of the mobile-pad egress tower (cherry picker) was completed.

AUG. 3, 1960 — Redstone launch vehicle No. 1 was delivered to Cape Canaveral for the MR-1 (Mercury Redstone).

AUGUST 5, 1960 — NASA and the Department of Defense announced the settlement of patent infringement claim by the estate of the late Robert H. Goddard, which had been pending since 1951, for \$1-million.

Welcome

(Continued from Page 6)

Raymond M. Fish.

Guidance and Control Division: Thomas A. Anderson, Troy J. Blucker, James F. Harrison, William H. Hyams, Louis A. Kleiman, Richard J. Labrecque, W. Lee Moore, Vernon Shields, Harold S. Croys, and Thomas L. Wilson.

Propulsion and Power Division: Mary J. Chambers, Sidney J. Everett, Gene A. Hanover, Patricia A. Jackson, Paul L. Kelly, Howell W. Mann, and Steven E. Plotkin.

Structures and Mechanics Division: Gene G. Byrd, Richard H. Gunderson, Prentice R. Hull, Larry T. Lee, William D. Leech, Thomas J. O'Keefe, Arthur R. Rudnicki, and Otto C. Schellberg.

Advanced Spacecraft Technology Division: Ray M. Hively, Dean A. Horning, Peter R. Jordahl, Paul F. Lyons, Richard D. Perkins, Joshua I. Riber, and

Don Mei Tow.

Assistant Director for Flight Operations: Madelyn C. Mitchell, Lindell W. Byford, Nettie C. Fields, and Glenn T. Magness.

Flight Control Division: Michael C. Byrd, Jack Knight, James B. Reed, and Michael A. Tragarz.

Mission Planning and Analysis Division: John K. Burton, Thomas C. Cannon, Robert A. Kadlec, Paul H. Merz, David A. Ott, and Albert L. Vitter.

Flight Support Division: Richard L. Mohr.

Apollo Spacecraft Program Office: Aubrey L. Brady and Vernon Smith.

White Sands Operations: Joseph W. Demic, Charles R. Espinoza, Doyle G. Hayes, Tony J. Lucero, Clara M. Serna, Harold D. Smith, and Cheryl L. Williams.

Flight Safety Office: Cynthia I. Ellzey.

Assistant Director for Flight Crew Operations: Ermagene Adams and Doris L. Frazier.

Gemini Program Office: Ocie J. Herring.

Cost Reduction Contest Winners



WINNERS AND THEIR ENTRIES—The first place winners of the MSC portion of the NASA cost reduction symbol and slogan contest are shown with their entries that won awards of \$150 for each. Marilyn J. Bocking holds her slogan "Out of this world with down-to-earth costs," and Stanley R. Richards holds a drawing of his entry. Both entries were sent to NASA Hq to compete for the \$500 awards that are to be awarded to the finalists August 2.

Space-To-Earth Voice Transmission Over Beam Of Light To Be Attempted

The first space-to-Earth voice transmission over a beam of light will be attempted early next year during the Gemini VII flight.

Astronauts Frank Borman and James A. Lovell Jr. will conduct the experiment with the aid of a laser "ray gun" aimed at a receiver at White Sands, N. M., as the spacecraft passes over the area.

The laser package which weighs six pounds and resem-

bles a hand held home movie camera, will be aimed by Lovell sighting through a six-power telescope built into the unit. When he spots a beacon at White Sands, he will activate the laser. When contact is made by the laser beam, Lovell will start talking into a built in microphone.

During the optical communications experiment, Borman, the command pilot, will maintain proper spacecraft attitude by

sighting a ground beacon operating in the visible spectrum from the White Sands station. The laser beam will not be visible to the two astronauts and they will wear special blue-tinted glasses to keep stray laser beams from their eyes.

This experiment will aid in determining the feasibility of using optical frequencies for communications from an orbiting spacecraft or other manned vehicles. Also the efficiency of



the astronaut as a pointing servo element will be evaluated.

Scientific data to be obtained from the experiment is background sky radiance and atmospheric transmission effects on a one-way laser beam and its modulation. This data will be important in designing more sophisticated laser communication systems.

The basic device in the flight transmitter is a gallium arsenide laser diode. This is a semiconductor device that converts

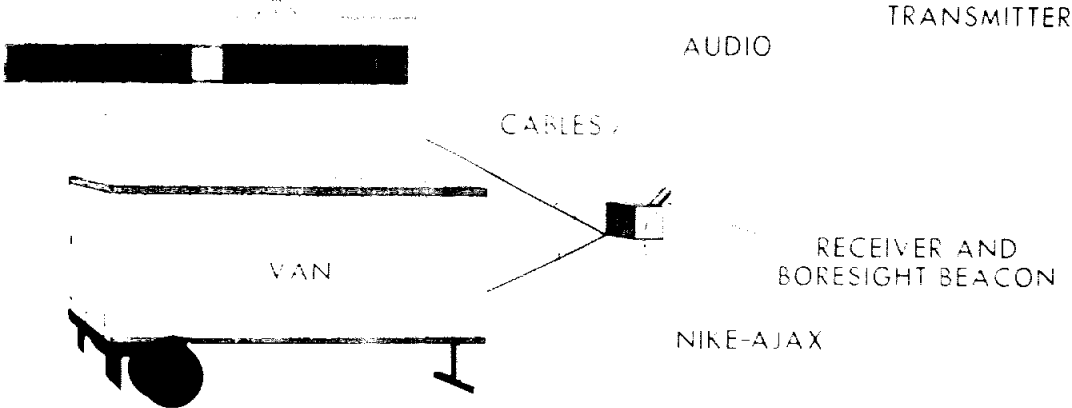
electrical energy into light energy which is emitted at a wavelength of about 9000 Angstroms. The light output power is approximately 15 watts peak and the beam width is three milliradians (0.15 degrees). At a distance of 300 miles, the laser beam would spread to about one mile in diameter.

No time has been set for the experiment during the 14-day flight. Good weather is required with no more than 20 to 30 per cent cloud cover at White Sands.

OPTICAL RECEIVER AND BORESIGHT BEACON SLAVED TO WSMR FPS 16 RADAR



FPS 16 RADAR



LASER EXPERIMENT—The above drawing shows the type setup that will be used for the Gemini laser experiment at White Sands Missile Range.

Mariner IV Makes History

First Close-Up Mars Photos Taken

Transmission of the long awaited close-up photographs of the planet Mars began July 15 from the Mariner 4.

The first historic photograph was made available to the public late that same day. It was taken from 10,500 miles as the space-

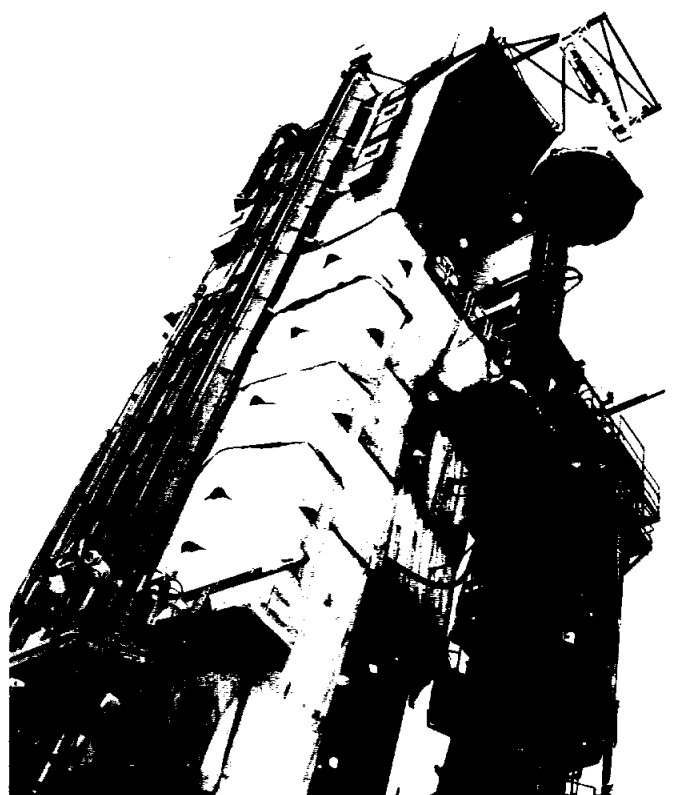
craft began its picture taking sweep across the planet Mars. An area 200 miles square north of Mars Equator was shown in this first view. Scientists described the photo as showing a broad featureless desert with a few low hills bordering it.

A scientist at the Jet Propulsion Laboratory at Pasadena, Calif., said that he doubted that any of the expected 20 or 21 Mariner 4 photos to be received over a 10-day period would give any clues to the major mystery of Mars—does it harbour life?

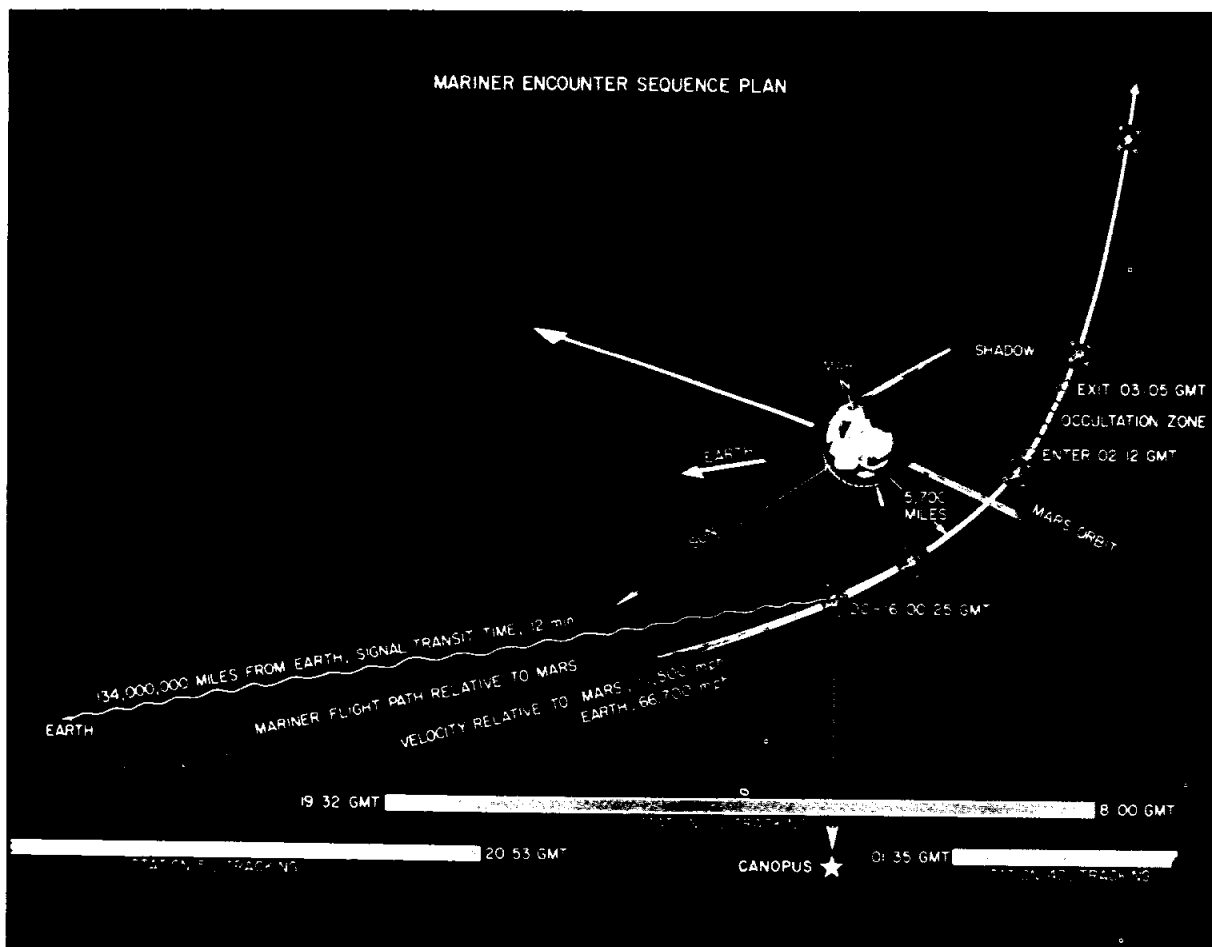


LASER "RAY GUN"—Douglas S. Lilly, project engineer for the communication experiment, holds a model of the laser unit that will be used on the Gemini VII flight. Lilly, from the Instrumentation and Electronic Systems Division, demonstrates the unit for newsmen at a press conference held at the Center.

Gemini V Spacecraft Mated



GEMINI V PREPARATIONS—The spacecraft for the Gemini V mission, shrouded in its protective cover, is hoisted to the Cape Kennedy Pad 19 white room. The spacecraft was mated to the launch vehicle July 6 and combined systems testing was started July 12. Following this a flight configuration mode test was run. Guidance and control tests began after the mating. A wet mock and simultaneous launch countdown demonstration was to have taken place this week with the spacecraft's fuel cells to be activated for the first time since their arrival at the Cape.



MARS-MARINER ENCOUNTER—The above drawing shows the Mariner encounter sequence plan for the photo taking pass by the planet Mars.