

# Space News **ROUNDUP!**

## Scientist-Astronauts Join NASA Space Program



**NEW ASTRONAUTS**—The newest group of astronauts are shown as they posed for photographers after the press conference held for them June 29. They are (front l. to r.) Owen K. Garriott, Harrison H. Schmitt, Edward G. Gibson, (back l. to r.) Frank Curtis Michel, Duane E. Graveline, and Joseph P. Kerwin.

### Will Train For Apollo Missions As Specialized Scientific Crewmen

NASA's new scientist-astronauts who will train as highly specialized scientific crewmen for the Apollo program were introduced at a press conference at the Manned Spacecraft Center, June 29.

The six new astronauts—one geologist, two physicians, and three physicists—will join the 28-man team of astronauts already in training here at MSC.

They are: Owen K. Garriott, 34, of 825 Cedro Way, Stanford, Calif., an associate professor of physics at Stanford University.

Edward G. Gibson, 28, of 2907 Via Corbina, San Clemente, Calif., a senior research scientist at Applied Research Laboratories, Aeronutronic Division, Philco Corp., Newport Beach, Calif.

Duane E. Graveline, 34, of 705 Windrock Drive, San Antonio, Tex., a flight surgeon at the NASA Manned Spacecraft Center.

Lt. Cdr. Joseph P. Kerwin, 33, of 3056 Lakeshore Blvd., Jacksonville, Fla., staff flight

surgeon for Air Wing Four, Cecil Field Naval Air Station, Fla.

Frank Curtis Michel, 31, of 6415 Mercer St., Houston, Tex., an assistant professor of space sciences, Rice University.

Harrison H. Schmitt, 29, of 709 W. Grand Canyon Ave., Flagstaff, Ariz., an astrogeologist for the U.S. Geological Survey.

They were chosen from a group of 16 nominees submitted to NASA by the National Academy of Sciences, Washington, D. C. The Academy screened about 400 applications forwarded by NASA earlier this year.

Two of the six selectees are qualified jet pilots. Kerwin has been a Naval Aviator since 1962; Michel has about 500

*(Continued on Page 2)*

## Apollo Off-The-Pad Abort Test Termed An 'Unqualified Success'

The off-the-pad abort test of the Apollo launch escape system (LES) with a boilerplate spacecraft at White Sands Missile

Range in New Mexico, June 29, was termed an "unqualified success" by Edison M. Fields, assistant flight director.

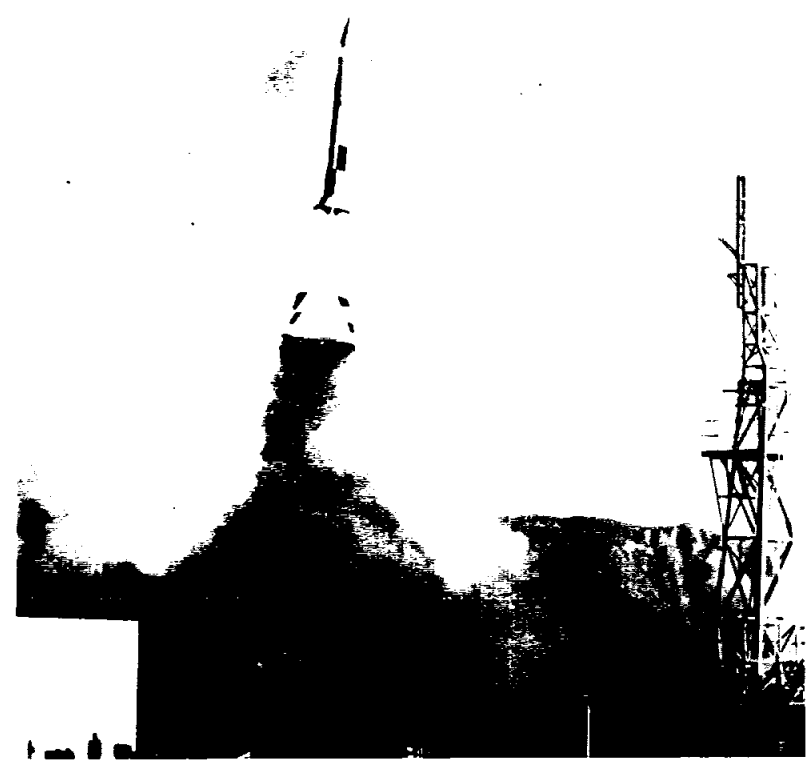
This fifth in a series of Apollo launch escape system tests lifted off Launch Complex 36 at 6 a.m., MST, after a perfect three hour and five minute countdown. Henry R. Van Goey was flight director for this test.

During the 105-second flight, the Boilerplate 23A Apollo spacecraft was lifted 6,000-feet above the range by the launch escape vehicle (LEV) with the landing taking place about 6,800-foot downrange.

The canards affected a turn around of the spacecraft to a blunt-end-forward attitude, the tower jettison motor ignited and removed the tower and boost protective cover from the spacecraft, then the forward heat shield that covers the parachute container on the "upper deck" of the spacecraft was jettisoned.

Almost immediately after this sequence of events, dual drogue parachutes were deployed by

*(Continued on Page 3)*



**BP-23A LIFTOFF**—The Apollo launch escape vehicle lifts the Boilerplate-23A command module off the White Sands Missile Range Launch Complex 36 at 6 a.m., MST, June 29.

### Lunar Thermal Contour Map



**LUNAR "HOT SPOTS"**—Plateaus and peaks of heat rising from one area of the moon's cold surface during eclipse are represented as physical contours on this thermal map. It was prepared from data collected by Boeing physicists during lunar heat-mapping experiment in Egypt last year. The floor of the map represents a temperature of -144 degrees F., the moon's general surface temperature during eclipse. Each 1/20 of an inch plateau above the map's floor represents an area 30 degrees warmer than the eclipsed lunar surface. Some of the highest "temperature peaks" on the thermal contour map are craters which remain as much as 100 degrees F. warmer than the surface during eclipse. During non-eclipse periods, some thermal contours are reversed (the heat peaks becoming cool wells in the lunar surface) while some are not. This is a heat-map of the moon's Sea of Tranquillity. A Boeing Scientific Research Laboratories technician, points to the impact area of the Ranger 8 spacecraft. Eventually, Boeing physicists hope to build a thermal contour map of the moon's entire visible surface.

## Astronauts

(Continued from Page 1)

hours in Air Force jets. They will report to the Houston space center to begin training in late July.

The others will report July 29 to Williams AFB, Ariz., to join an Air Force class of cadets for a year of pilot training, then will continue training at Manned Spacecraft Center.

Garriott and Graveline are private pilots.

The new astronauts were judged by the Academy mainly on their scientific backgrounds, regardless of jet pilot experience, unlike previous astronaut selection programs. They also underwent strenuous physical examinations, were given jet indoctrination flights by MSC, and took extensive tests. Age limit was 34.

Of the other 28 astronauts on board at MSC, all hold bachelor degrees, ten have master's and one has his doctorate. All are qualified in jet aircraft and have flown a combined 85,000 hours.

Also taking part in the press conference June 29, were Dr. Robert R. Gilruth, director, MSC; Dr. Harry Hess, chairman of the Space Science Board, of the National Academy of Sciences; and Donald K. Slayton, assistant director for Flight Crew Operations.

Beginning in April 1964, the NASA Office of Space Science and Applications and the National Academy of Sciences co-operated in developing the scientific criteria for the selection process. The Academy conducted the screening for scientific qualification of the applicants. The NASA Office of Manned Space Flight and the Manned Spacecraft Center were responsible for all other aspects of selection criteria and screening.



JOSEPH P. KERWIN

Joseph P. Kerwin was born in Oak Park, Ill., Feb. 19, 1932. He is married to the former Shirley Ann Good of Danville, Pa., and they have a daughter, Sharon 2. His parents, Mr. and Mrs. Edward M. Kerwin, live in Chicago. He is six feet tall and weighs 174 pounds.

Kerwin has been in the Navy since July 1958, and won his pilot's wings at Pensacola NAS in 1962. He was named the out-

standing officer student in his cadet class. Prior to becoming a Naval aviator, he was flight surgeon for two years with Marine Air Group 14 at Cherry Point, N. C. Later, he served as flight surgeon for Fighter Squadron 101 at Oceana Naval Air Station, Virginia Beach, Va., then became staff flight surgeon for Air Wing Four, Cecil Field, NAS, Fla.

He is a 1949 graduate of Fenwick High School at Oak Park, Ill. He received his bachelor of arts degree in 1953 from the College of Holy Cross, Worcester, Mass., and his doctor of medicine degree from Northwestern University Medical School, Chicago. He was an intern at District of Columbia General Hospital, Washington, D. C., during 1957-58. He also attended the U.S. Navy School of Aviation Medicine at Pensacola, in 1958.



HARRISON H. SCHMITT

Harrison H. Schmitt was born at Santa Rita, N.M., on July 3, 1935. He is five feet, nine inches tall and weighs 165 pounds. A bachelor, his parents, Mr. and Mrs. Harrison A. Schmitt, live in Silver City, N. M.

Schmitt has been with the U.S. Geological Survey's Astrogeology Department at Flagstaff, Ariz., for the past year. He was project chief on photo and telescopic mapping of the moon and planets, and was among the USGS astrogeologists instructing NASA astronauts during their geological field trips. From June 1963 to June 1964 Schmitt was on a National Science Foundation post-doctoral fellowship at Harvard's Department of Geological Sciences. Prior to that fellowship, Schmitt had received a Fulbright Fellowship to Norway (1957-58) a Kennecott Fellowship in Geology (1958-59), a Harvard Fellowship (1959-60), a Parker Traveling Fellowship (1961-62), and a Harvard Traveling Fellowship (1960).

He graduated from Western High School, Silver City, N.M., in 1953, and from the California Institute of Technology, Pasadena, in 1957. He studied at the University of Oslo in Norway during 1957-58, and received his doctorate in Geology from Harvard last year. He was a teaching fellow at Harvard in 1961 where he taught geological sciences. Earlier, he had done geological

work for the Norwegian Geological Survey in Oslo, and for the U.S. Geological Survey in New Mexico and Montana, including some undergraduate work. He is a member of Sigma Xi and the American Geophysical Union.



EDWARD G. GIBSON

Edward G. Gibson was born in Buffalo, N. Y., Nov. 8, 1936. He is five feet, nine inches tall and weighs 160 pounds. He is married to the former Julia Ann Volk of Alden, N. Y., and they have a son, John I, and a daughter, Jannet 5. His parents, Mr. and Mrs. Calder A. Gibson, live at Kenmore, N. Y.

Gibson has been in aerospace research with Applied Research Laboratories, Newport Beach, Calif., since June 1964 when he received his doctorate in engineering physics from the California Institute of Technology. He received his master of science degree in 1960 at Caltech, and his bachelor of science in 1959 at the University of Rochester, N. Y. He is a 1955 graduate of Kenmore High School at Kenmore, N. Y.

While studying at Caltech in Pasadena, Calif., Gibson was a research assistant specializing in jet propulsion and atmospheric physics, and later wrote several technical papers, including some on his work with LASER. He is a member of Tau Beta Phi, Sigma Xi, American Institute of Aeronautics and Astronautics, is an R. C. Baker Fellow and a Fellow of the National Science Foundation.



DUANE E. GRAVELINE

Duane E. Graveline was born at Newport, Vt., March 2, 1931. He is six feet tall and weighs 165 pounds. His wife is the former Carole Jane Tollerton of Newport, and they have four daughters: Jill 13, Joan and Jean 12, Jane 10. His parents, Mr. and Mrs. Edgar Graveline, live at Newport.

Graveline left the U.S. Air Force earlier this month to join the staff of the Medical Operations Office at Manned Spacecraft Center. He was a military flight surgeon at the Aerospace Medical Division, Brooks AFB. He formerly was a scientific researcher in the field of bioastronautics at Wright-Patterson AFB, Ohio, and served as Chief of Aviation Medicine at Kelly AFB in 1956-57. He has written more than a dozen technical and scientific papers, including many on the effects of prolonged weightlessness in space flights. He also participated during Project Mercury as a medical monitor for NASA.

He attended public schools in Vermont, received his bachelor of science degree from the University of Vermont and won his doctor of medicine degree in 1955 from the Vermont Medical School. He interned at Walter Reed Army Medical Center in Washington, D.C., in 1955-56, then earned his master of public health degree from John Hopkins School of Hygiene in 1958. While in the Air Force he attended Nuclear Medicine School, the Air Force School of Aviation Medicine, Missile Medicine School at Cape Kennedy, Fla., and Advanced Aerospace Medicine School at Brooks AFB.



F. CURTIS MICHEL

F. Curtis Michel was born at LaCrosse, Wisc., June 5, 1934. He is five feet, eleven inches tall and weighs 160 pounds. His wife is the former Beverly Muriel Kaminsky of Sacramento, Calif., and they have one son, Jeffrey 2. Michel's mother, Mrs. Viola Bloom, lives in San Francisco.

Michel has been at Rice University, Houston, since July 1963. He researches and teaches space sciences, such as the interaction of solar winds and the lunar atmosphere. He formerly was a research fellow at the California Institute of Technology, Pasadena, doing experi-

mental and theoretical work in nuclear physics. He received his doctorate in physics at Caltech in 1962. Previously he had earned his bachelor of science degree there "with honors" in 1955. He is a 1951 graduate of McClatchy High School, Sacramento.

Prior to joining the Air Force in 1955, Michel was a junior engineer working on the Corporal Missile Program at the Guided Missile Division of Firestone Tire and Rubber Co., Southgate, Calif. An Air Force ROTC graduate, Michel received flight training at Marana AFB, Tucson, Ariz., and at Laredo and Perrin Air Force Bases in Texas. He flew F86 interceptors in the United States and Europe during his three years in military service.



OWEN K. GARRIOTT

Owen K. Garriott was born at Enid, Okla., Nov. 22, 1930. He is five feet, nine inches tall and weighs 145 pounds. His wife is the former Helen Mary Walker of Enid. They have three sons: Randall 10, Robert 9, Richard 4. His parents, Mr. and Mrs. Owen Garriott, live at Enid.

Garriott has been teaching electronics, electromagnetic theory and ionospheric physics at Stanford University since 1961, and has performed research in ionospheric physics since obtaining his doctorate at Stanford in 1960. He is a 1948 graduate of Enid High School, received his bachelor of science degree from the University of Oklahoma in 1953, and got his master of science degree from Stanford in 1957.

He spent a year in England on a National Science Foundation fellowship at Cambridge University and at the Radio Research Station at Slough in 1960-61. He was a consultant to the Manned Space Science Division of NASA's Office of Space Sciences and Applications, and to Lockheed Corporation's Space Physics branch. He was secretary to the U.S. Commission, International Scientific Radio Union, was regional editor of *Planetary and Space Sciences*, is a member of the American Geophysical Union, Tau Beta Pi, Sigma Xi, and the Institute of Electrical and Electronic Engineers. He was an electronics officer in the Navy for three years, serving on destroyers.

## MSC Employees Given Recognition At Special Awards Ceremony

At a Special Awards Ceremony, June 28, in Building 1 Auditorium, a group of Manned Spacecraft Center employees were given special recognition by Center officials.

The Presidential Citation, Invention Awards, Special Service Awards, and Outstanding Performance Ratings were presented by Paul E. Purser, special assistant to the MSC director.

Sustained Superior Performance Awards and Quality Salary Increases were presented by Stuart H. Clarke, chief, Personnel Division.

Suggestion Awards were presented by Joseph N. Kotanchik, chief, Structures and Mechanics Division.

Cost Reduction Awards were presented by Charles F. Bingham, chief, Management Analysis Division.

The Presidential Citation was presented to John H. Robinson of Resources Management Division. Robinson was one of the three individuals responsible for organizing a control center, preparing all PERT networks, and actually operating this control center. The operation was so effective that the Air Force was able to complete a modernization program far ahead of schedule with a monetary saving of several million dollars.

Invention Awards were presented to the following: Lyle M. Jenkins and William H. Simmons, for "indexed keyed connection," \$200 shared. Frank Collier, Frank H. Samonski, and Robert E. Smylie, for "liquid gas separator for zero gravity environment," \$200 shared. Russell E. Clickner, for "umbilical disconnect," \$200. James H. O'Kane, for "pressure suit tie-down mechanism," \$300.

Presentation of the Special Service Award was made to Jesse C. Jones, for his superior ability in managing the personnel and the financial and physical resources under his supervision in the Thermochemical Test

Branch of the Propulsion and Power Division, and especially for arranging for certain Air Force equipment to be made available and officially transferred to the Manned Spacecraft Center. His efforts resulted in a direct savings to the Government of \$312,500.

The Air Force Commendation Medal (First Oak Leaf Cluster) was presented to Capt. Joseph F. Stegall for distinguishing himself by meritorious conduct in the performance of outstanding service to the United States as a project engineer assigned to the MSC Flight Crew Support Division, from Dec. 1, 1963 through Nov. 15, 1964. The citation stated that during this period, Capt. Stegall's initiative and diligence contributed directly to the advancement of the national manned lunar landing program. Capt. Stegall's accomplishments reflect great credit upon himself and the United States Air Force. Warren J. North, chief, Flight Crew Support Division, made the presentation.

Outstanding Performance Ratings were awarded to employees whose performance significantly exceeded the normal requirements in all aspects and is outstanding to the extent that commendation is warranted. This rating is in itself a very high honor and does not consist of a cash award. Awardees and their division are: Engineering Division, Thomas C. Snedecor; Management Services Division, Iris A. Garner; Photographic Technology Laboratory, Frederick J. Southard; Procurement and Contracts Division, Alma S. Martin; Resources Management Division, Russell C. Connelly and Arthur T. Deaton; Technical Services Division, Lesley G. Waldron and James T. Arnold. Advanced Spacecraft Technology Division, John E. Dornbach and Bruce G. Jackson; Crew Systems Division, James C. Brady and Joe W.

Schmitt; Instrumentation and Electronic Systems Division, Norman B. Farmer and Donald G. Wiseman; Propulsion and Power Division, Norman H. Chaffee and Cecil R. Gibson. Flight Control Division, Eugene F. Kranz, Stuart M. Present, and Manfred H. Von Ehrenfried; Mission Planning and Analysis Division, Edgar C. Lineberry, Jr., and Frank J. Suler. Flight Crew Support Division, Paul C. Kramer.

Sustained Superior Performance Awards were presented to these MSC employees who performed their assigned duties above normal work standards and have been superior in the major aspects of their jobs for at least six consecutive months in the same grade. The SSP Award consists of a parchment certificate and a cash payment varying upwards from \$150 depending upon the grade of the recipient.

Administrative Services Division, Velma W. DeBusk and Robert L. Somerville; Procurement and Contracts Division, Elliott H. Cohn.

Assistant Director for Engineering and Development, Jean T. Tarpley; Advanced Spacecraft Technology Division, Gil Chisholm and Milton A. Silveira; Computation and Analysis Division, Eddie M. Pickett; Crew Systems Division, James V. Correale and John D. Lem; Guidance and Control Division, James W. Vanartsdalen; Instrumentation and Electronic Systems Division, Norman B. Farmer and Donald G. Wiseman; Propulsion and Power Division, James R. Briley, Norman H. Chaffee, Dorothy H. Cox, Cecil R. Gibson, Jerome H. Grayson and Howard H. Hamner; Structures and Mechanics Division, Ruth E. Karpf.

Flight Control Division, Donald O. Bray, Jimmy W. McCommis, Stuart M. Present and M. H. Von Ehrenfried, II; Mission Planning and Analysis Division, Carl P. Huss and Howard W. Tindall.

Flight Crew Support Division, Kenneth I. Mansfield and George H. Parker.

Quality Salary Increases were presented to MSC employees who have substantially exceeded their normal work standards in the most important job functions and have evidenced a high degree of effectiveness in their total performance. They have been employed by NASA for at least six months and have been in their present position for at least three months. These employees have given promise of continued excellence in their job performance. In most cases where the Quality Salary Increase is approved, the step increase is more beneficial to the recipient than a cash award.

The following received increases: Engineering Division, Thomas C. Snedecor; Photographic Technology Laboratory, Frederick J. Southard; Procurement and Contracts Division, LaVerne Hansen and Alma S. Martin; Resources Management Division, Russell C. Connelly and Arthur T. Deaton; Tech-



**PRESIDENTIAL CITATION**—John H. Robinson (left) receives congratulations and the Presidential Citation from Paul E. Purser. Robinson of Resources Management Division, was instrumental in saving the Air Force several million dollars.

nical Services Division, James T. Arnold and Lesley G. Waldron.

Advanced Spacecraft Technology Division, Bruce G. Jackson Crew Systems Division, James C. Brady and Joe W. Schmitt.

Flight Crew Support Division, Paul C. Kramer.

Suggestion Awards were presented to the following:

Marilyn J. Bockting, Office of the Deputy Director, "that reports distributed at MSC contain identification on the document showing the office of contact and the distribution," \$15, intangible—limited.

James W. Donnell, Flight Safety Office, "that names of personnel be placed outside the office where they work." (The other half of this suggestion that the room numbering system be revised was not adopted.), \$25, intangible—limited.

Annie H. Fitzgerald, Administrative Services Division, "that metal reflectors be installed on warehouse exit loading doors—this will be of benefit to fork-lift operators by reflecting motion," \$25, intangible—safety.

Marilyn J. Norling, Administrative Services Division, "that supply closets be stocked with forms," \$15 intangible—limited.

Judith J. Wyatt, Administrative Services Division, "that slick stairway landings in Building 2 (and possibly other buildings) be roughened," \$25, intangible—safety.

Joseph H. Barbour, Procurement and Contracts Division, "that controls on overhead cranes be relocated to make the control box more accessible to the operator," \$20, intangible.

Lyle D. Ferguson, Procurement and Contracts Division, "that the amount of daily demurrage charged per gas cylinder be shown on the purchase order," \$15, intangible.

Richard M. Gilley, Technical Services Division, "that a

chart listing all the dies in numerical order and the size tubing for that die be installed for beading and flare machines in the Technical Services Division," \$15, intangible—limited.

Garlan B. Moreland, Technical Services Division, "die retainer for yoder stretching and shrinking machine." (Consists of four bars bolted to the die holders of the yoder stretching machine.), \$25, intangible—safety.

James H. O'Neill, Technical Services Division, "demagnetizer for use in the Technical Services Machine Shop." (The Suggestor proposed this, had it built, and it is now in use in that division.), \$15, intangible—limited.

Clyde O. Waters, Technical Services Division, "that overhead lighting be installed at each waterwell," \$25, intangible—safety.

William A. Wohnhaas, Technical Services Division, "safety pertaining to large doors—that the present open shaft in Building 10 be enclosed with a heavy gauge wire screen and access possible only through a door kept locked by the supervisor," \$25, intangible—safety.

Virginia R. DeFoy, Photographic Technology Laboratory, "special form for expediting work within the Production Control Department of the Photographic Technology Laboratory," \$25, intangible—limited.

Lucille J. Blanco, Resources Management Division, "special form for requesting "Leave without Pay" or "Advanced Sick Leave," \$25, intangible—limited.

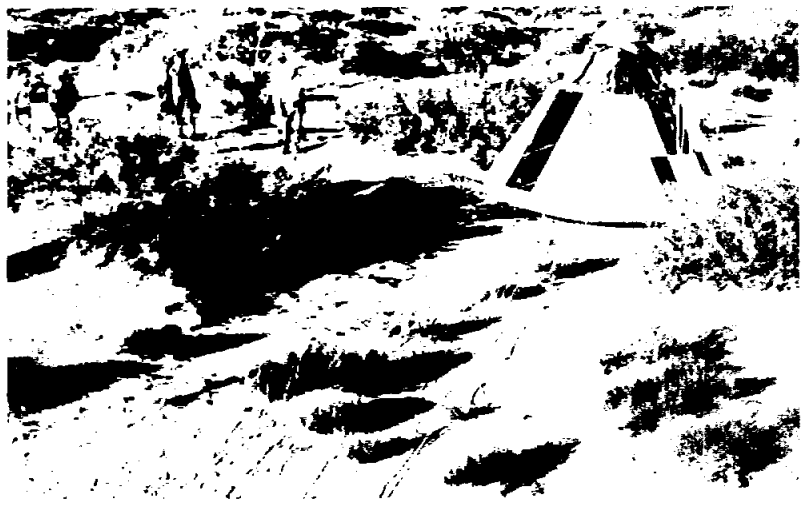
Paul H. Anderson, Engineering Division, "that the procedure of announcing each legal holiday be discontinued and an announcement be made only when there is a change in regula-

(Continued on Page 7)

## Apollo LES

(Continued from Page 1)

mortars and slowed the spacecraft's descent, as well as stabilizing the Apollo command module in a blunt-end-forward position.



**RECOVERY BP-23A**—Crews move into the landing area of the Apollo command module Boilerplate 23-A, 6,800 feet from the launching site. The command module made a gentle landing after being lifted about 6,000 feet above the White Sands Missile Range on June 29, by the Apollo launch escape vehicle.

# Space News **ROUNDUP!**

MANNED SPACECRAFT CENTER, HOUSTON, TEXAS

## EMPLOYEE NEWS

### Europe Tour Reservations Being Taken

The NASA Employees Association's ninth annual 30-day tour of Europe will leave New York for London on Monday August 30, and return from Paris, Tuesday, September 28.

All NASA employees are eligible, also spouses, dependent children and parents.

The all-expense tour price is \$940 per person. The tour will cover nine countries, England, Holland, Germany, Switzerland, Liechtenstein, Austria, Italy, Monaco and France.

A few seats will be held on the flight for those wishing to take the air transportation only, at \$356 per person.

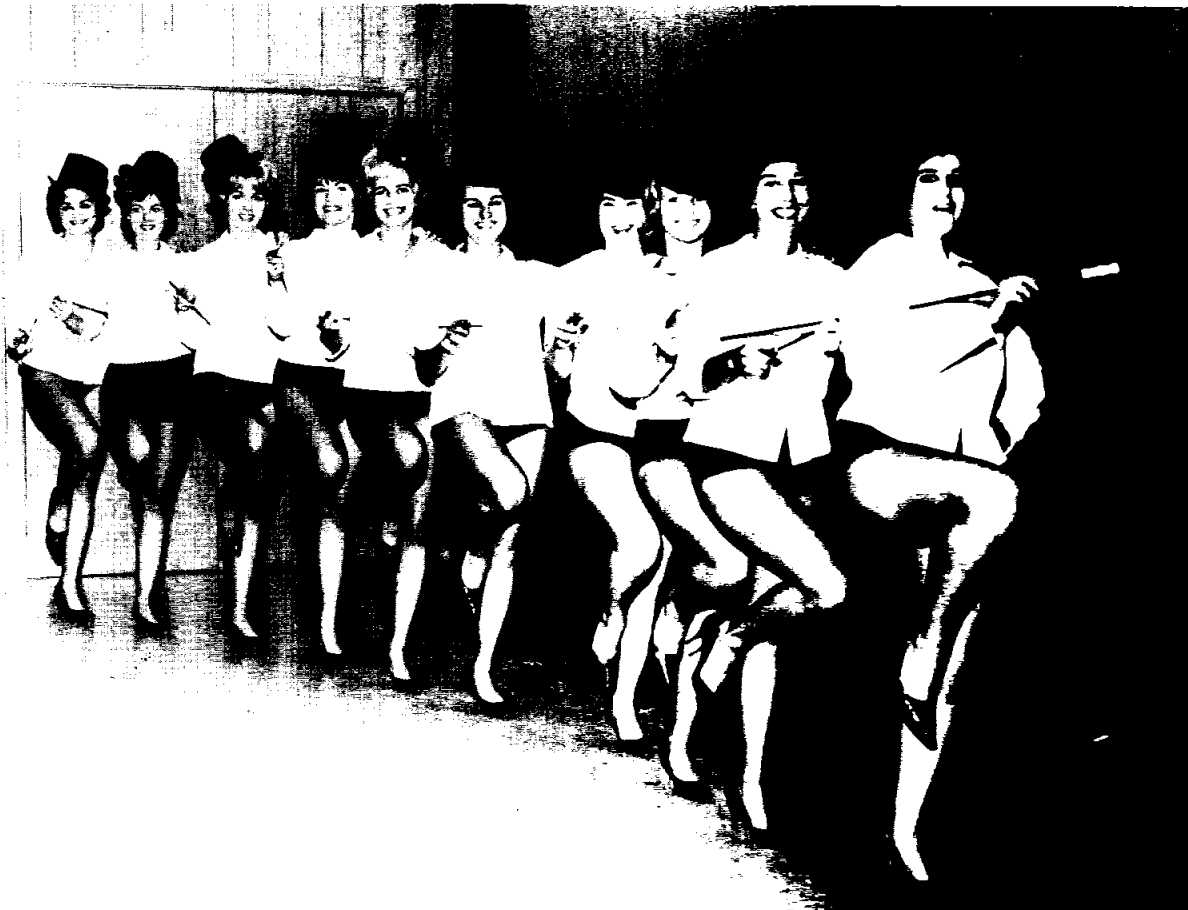
A valid passport will be needed for the trip, along with a smallpox vaccination within the past three years certified by a

Board of Health.

Each reservation will require a \$100 deposit. For more information and reservation forms, call Flora Byars at Ext. 3881.



**MOVIE THEMES**—Herman Hines will sing two movie theme songs, "Exodus" and "Moon River," July 16, 17, and 18, at "Vaudeville Revisited '65."



**CHORUS LINE**—With top hats and canes, the girls in the chorus line practice their numbers for "Vaudeville Revisited '65," July 16, 17, 18. Shown are (l. to r.) Sandy Burdsall, Wanda Slack, Karla Garnuch, Suelyn Johnson, Gayle Porter, Marilyn Davis, Sharon Brennan, Pat McBride, Helen Gregory, and Charlotte Maltese.

## EAA Vaudeville Variety Show Next Week Proceeds To Benefit Freeman Libraries

Performances of "Vaudeville Revisited '65," benefit variety show, are scheduled for 8 p.m., July 16, 17, and 18 in the Building 1 Auditorium.

Tickets are now on sale and may be purchased from members of the cast, Executive Board of Employees Activities Association, EAA representatives, or Juanita Bower, Ext. 4951. Leroy Fair, Ext. 7225, is in charge of ticket sales at Ellington. Tickets will also be available in the Cafeteria from 11 a.m. to 1 p.m. beginning July 12 and ending July 16.

"Vaudeville Revisited '65" is open to all MSC employees, contractors, their families and friends. People who do not have stickers on their cars will be admitted to the site by showing

their tickets at the gate. Adults' and children's tickets will be \$1 each. There will be only 800 seats for each performance, so purchase tickets as early as possible.

All proceeds from the three performances will be shared by the Theodore Freeman Library of Aeronautics and Astronautics at the Houston Baptist College and the recently formed Captain Freeman Library of Clear Lake City.

"Vaudeville Revisited '65" promises to be an entertaining evening of song, dance, instrumentals and comedy. Twenty-seven acts will be presented during the 3-hour 15-minute show. There will be a 15-minute intermission, and soft drinks will be available in the lobby.

Juanita Bower is the director of "Vaudeville Revisited '65," and assisting her is Dr. Henry Eason, head of the drama department at the Houston Baptist College. Mrs. Bower said that everyone who attends will be pleasantly surprised by the outstanding talent of their co-workers.

Master of Ceremonies for the variety show will be Jim Gorman. The MSC Charm Club girls will act as usherettes.

Faith Freeman, widow of Astronaut Theodore Freeman, will attend the opening night performance as a guest. Two other guests on opening night will be Dr. W. H. Hinton, from the Houston Baptist College, and Richard Allen, representing the Captain Freeman Library.



**BANJO DUET**—Lloyd Wells (l.) and Jimmy Yoder (r.) strum their banjos for the rehearsal of their act as a banjo duet in "Vaudeville Revisited '65," July 16, 17, 18, in the Building 1 Auditorium at the Center.

### New Organ Club Meets Each Monday, Membership Open

The recently organized Organ Club for beginners and those desiring to improve their organ playing ability, meets at 5:15 p.m. each Monday at the Kings Inn.

Meetings consist of theory, demonstration by the organ instructor and performance by the members. The instructor for the group is Ed Jenkins who is a popular recording, radio and TV personality.

MSC employees and their families are invited to join the club. For more information call Evelyn Huvar at Ext. 2541.

## Private Pilot Ground School Set For Aero Club Members

The Aero Club is scheduled to begin another private pilot ground school about August 16 and all interested in attending should be present at the club's monthly meeting August 2 or call Ernest Weeks at Ext. 5361.

Membership in the Aero Club has nearly reached the 300 paid membership mark. Meetings are held the first Monday of each month at 5 p.m. in the auditorium of Building 30.

It was announced by Don

Bray, the club's information officer, that the Houston Air Route Traffic Control Center began FAA operations June 26. This control is mainly for aircraft involved in flying under instrument control on federal airways. The Houston tower has implemented an Automatic Terminal Information Service. Bray said, which gives continuous weather broadcast on 127.6 mc.

For additional information on the club call Bray at Ext. 3754.



**JULY 4th CAKE**—Members of the MSC Mail and Records Section are shown with a cake, decorated to resemble the United States Flag, which they had made to commemorate Independence Day. The cake served a dual purpose, it also supplied desert for the group's noon meal last Friday.

Performance Awards Presented



OUTSTANDING PERFORMANCE—Robert F. Thompson (left) and Paul E. Purser (right) were presented awards June 28 by Dr. Robert R. Gilruth, director, MSC. Thompson, chief of the Landing and Recovery Division, was presented an Outstanding Performance Rating. Purser, special assistant to the director, was presented an Outstanding Performance Rating and a Sustained Superior Performance Award.

Equal Opportunity Policy Stated

(EDITOR'S NOTE: The following article is published at the request of the MSC Personnel Division to keep employees informed.)

It is a well-established policy of the Federal Government, and of NASA to secure equal treatment and equal opportunity for all Americans, regardless of their race, sex, color, religion, or national origin. This policy has been stated so clearly and unequivocally in various laws, regulations, Executive Orders, and statements by the President as to eliminate all doubt as to its meaning and broad application.

To assure compliance with the policy of nondiscrimination, the President's Committee on Equal Employment Opportunity has provided for appellate procedures within each agency and appeals directly to the Committee. The complaint procedure, contained in NASA Management Instruction 3-1-5.2, is summarized below:

Any Federal employee or qualified applicant for Federal employment who believes he has been discriminated against because of race, color, religion, or

national origin may file a written signed complaint. The complaint must normally be filed within 90 days from the date of the alleged discrimination and may be submitted to one of the following:

Wesley L. Hjernevik, Deputy Compliance Officer, Manned Spacecraft Center, Houston, Texas; Alfred S. Hodgson, NASA Principal Compliance Officer, National Aeronautics and Space Administration, Washington, D.C. 20546; or The President's Committee on Equal Employment Opportunity, Washington, D.C. 20501.

The regulations of the President's Committee are on file in the Personnel Division and are available for review by any interested employee or applicant.

MSC To Participate In Houston-Galveston Wage Board Survey

The Bureau of Labor Statistics is now conducting a community wage survey of Harris County.

Beginning in June, NASA and the Army-Air Force Wage Board will conduct jointly a supplementary full-scale locality wage survey in the Houston-Galveston area. Ellington Air Force Base and the Galveston Engineer District will participate with the MSC representatives in conducting this supplementary survey.

The NASA and the Army-Air Force Wage Board survey teams will not duplicate the surveys already conducted by the Bureau of Labor Statistics; however, the data from both surveys will be used to determine the wage rates for blue collar occupations in this area.



PERFORMANCE AWARD—Roy Alford (left), executive assistant to the MSC Public Affairs Officer, is the recipient of the Sustained Superior Performance Award. The presentation was made by Paul E. Purser, special assistant to the MSC Director.



SSP AWARD—Howard Gibbons (left) chief, News Services Branch, Public Affairs Office, is the recipient of the Sustained Superior Performance Award. The presentation was made by Dr. Robert R. Gilruth, director, MSC.

MSC-EAFB SOFTBALL

Standings as of June 26  
Fast Pitch

TEAM	W.	L.	Pct.	G.B.
2578th AB SQ	7	1	875	—
Rams	7	1	875	—
Lone Stars	7	1	875	—
CG-Choppers	6	1	857	1/2
FCD	5	3	625	2
Weather	5	3	625	2
Colt 38's	4	3	572	2 1/2
IBM	4	4	500	3
Comm-SQDN	4	4	500	3
Wolfs	3	4	429	3 1/2
ID	3	5	375	4
Lockheed	2	5	286	4 1/2
Hustlers	2	6	250	5
Rag Mops	1	7	125	6
Firemen	1	7	125	6
LoBos	1	7	125	6

Slow Pitch

TEAM	W.	L.	Pct.	G.B.
Animals	8	0	1000	—
Hustlers	7	1	875	1
MPAD-RAB	6	1	857	1 1/2
Mis-Fits	6	2	750	2
CSD	5	3	625	3
8-Balls	4	3	572	3 1/2
Mets	4	3	572	3 1/2
RMD-Plus	4	4	500	4
LRD	3 1/2	4 1/2	438	4 1/2
Machinists	3	4	429	4 1/2
Fabricators	3	4	429	4 1/2
Odds-Ends	2	5	286	5 1/2
Virginians	2	6	250	6
Moonrakers	2	6	250	6
Lunartechs	1	7	125	7
USCG(H)	1/2	7 1/2	063	7 1/2

League Champions Presented Trophies

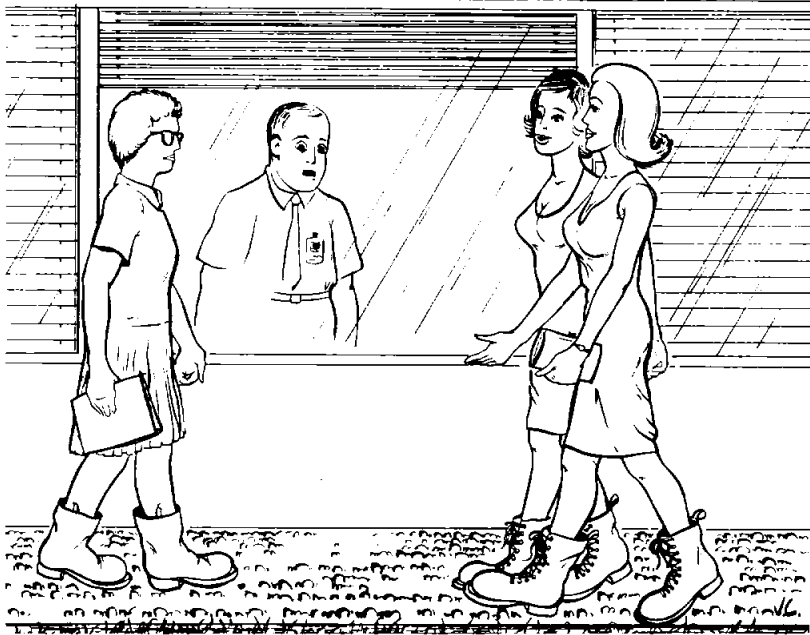


BOWLING CHAMPS—The Fabricators were recently awarded trophies for the Championship of the Mimosa Men's Bowling League. The champions and their trophies are (seated on table) Jim Warren, left, and Leon Galler, right, and (standing l. to r.) Gail Blalock, Fred Rowell, Charlie Gardner, Ray Donatto, Paul Folwell, and Rees Underhill.

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

## On The Lighter Side



"Not only do they cost less, but the heels last much longer."

### SPACE QUOTES

PROPERLY PHASED PROGRAM DEPENDS ON RESEARCH. NASA Administrator James E. Webb, Chamber of Commerce, Sandusky, Ohio, May 13, 1965.

"The importance of our advanced R&D programs can be seen

in the present accomplishments in space, which are built on the foundations of research that has gone before. Furthermore, our hope for a successful onward moving program in exploring space depends on the advanced research we are performing today. Progress in pushing back the limits of outer space relies on administering a continuing, properly phased program which is attentive to current needs and anticipates the needs of the future."

## Welcome Aboard

Fifty-five new employees joined the Manned Spacecraft Center during the last reporting period.

Assistant Director for Ad-

ministration: Linda L. Eggleston.

Procurement and Contracts Division: Marya W. Baugh, Arthur Earl Gilbert, Gerardo S. Gonzales, Thomas F. Krenk, Ginger R. Lintott, and Willie E. Wright.

Technical Services Division: John W. Ivers, Joe W. Copeland, and Gerald A. McNeil.

Engineering Division: James C. Hollinden, and Alan P. Mateja.

Personnel Division: Marylyn M. Knapp, and Tessa L. Slager.

Resources Management Division: Barbara L. Werner.

Astronaut Office: Linda K. Koban.

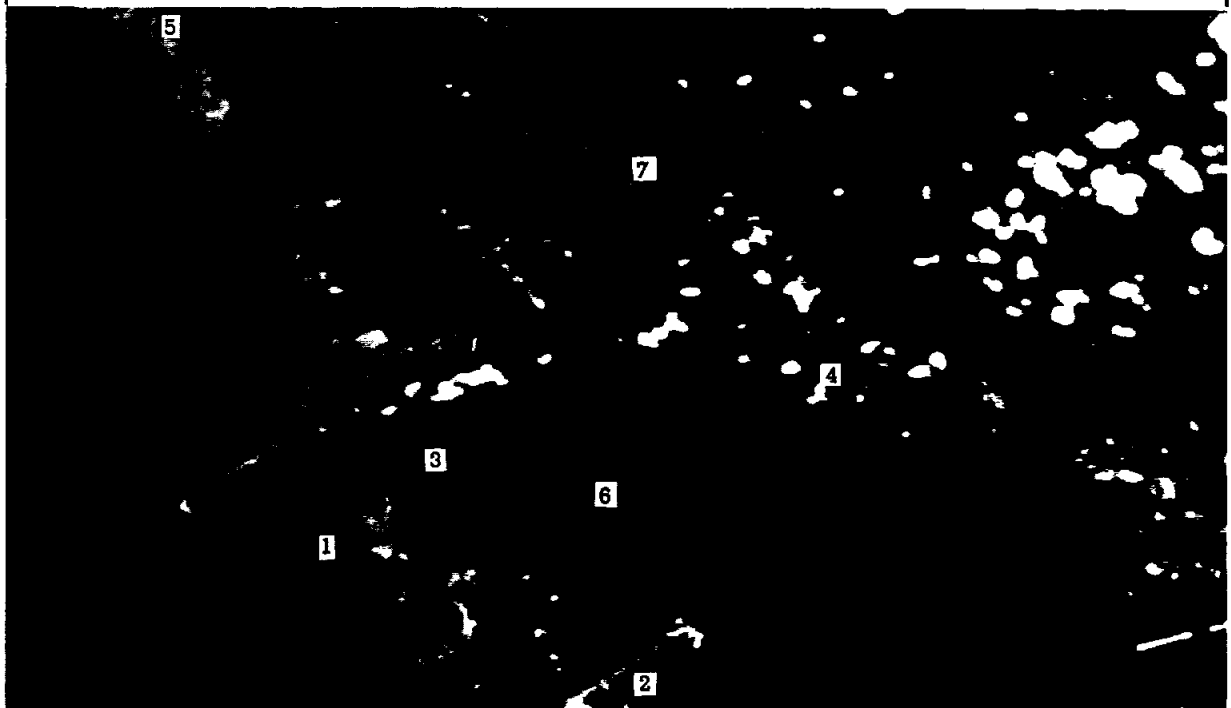
Aircraft Operations Office: Conway H. Roberts.

Flight Crew Support Division: John H. Covington, Stephen P. Grega, James F. Kerswell, William A. Langdoc, Robert T. Neal, and William G. Sebastian.

Assistant Director for Engineering and Development: Coy C. Summers.

Information Systems Division: Priscilla L. Holmes, and Keith Loren Thieroff.

## Cape Kennedy As Seen From Gemini IV



GEMINI IV VIEW OF CAPE—This photo of the Cape Kennedy area was enlarged from a portion of a negative taken with a hand-held Hasselblad camera by the Gemini IV crew on one of their passes over the area. The numbered areas are: (1) the Cape Kennedy Launch complexes; (2) the Saturn V launch complexes on Merritt Island; (3) the Banana River; (4) the Indian River; (5) Cocoa Beach; (6) the NASA industrial area on Merritt Island; and (7) the city of Cocoa.

### Space News Of Five Years Ago

JULY 9, 1960—Maj. Gen. Leighton I. Davis was appointed DOD representative for Project Mercury support, replacing Maj. Gen. Donald N. Yates.

JULY 11, 1960—NASA selected Hughes, North American, Space Technology Laboratory, and McDonnell to study designs for the first lunar soft-landing spacecraft.

JULY 12, 1960—Beginning on this date, the astronauts underwent a five and one-half day course in "desert survival" training at the Air Training Command Survival School, Stead Air Force Base, Nev.

JULY 14, 1960—Personnel strength in support of Project Mercury was 543. This included 419 assigned to the Space Task Group, and 124 personnel from the Langley Research Center.

JULY 18, 1960—Dr. Robert C. Seamans Jr., formerly chief engineer of RCA Missile Electronics and Control Division, was named associate administrator of NASA to replace Richard E. Horner.

Crew Systems Division: Jody P. Coles, James C. LeBlanc, and Andris A. Staklis.

Computation and Analysis Division: Charles E. Wilson.

Instrumentation and Electronic Systems Division: Betty R. Ranes, Jared R. Woodfill, and George T. Lewis.

Guidance and Control Division: Paul D. Dell'osso, Stewart F. McAdoo, and Teddy K. Stitzlein.

Propulsion and Power Division: Vera J. Krebs, Ronald B. Maxwell, and Albert V. Shannon.

Structures and Mechanics Division: Stanton A. Glantz, and Abraham R. Johnston.

Advanced Spacecraft Technology Division: James L. Dragg, and Robert B. Manire.

Assistant Director for Flight Operations: Diana L. Shank.

### President Presents Medals



EXCEPTIONAL SERVICE MEDALS—At special White House ceremonies honoring the two astronauts, President Johnson pins an "Exceptional Service Medal" on Astronaut Edward H. White II as NASA Administrator James E. Webb and Vice President Hubert H. Humphrey look on. Charles W. Mathews, manager of the Gemini Program, and Astronaut James A. McDivitt received similar awards.

### President Presented U.S. Flag



WHITE HOUSE CEREMONIES—Astronauts James A. McDivitt and Edward H. White II present President Johnson with a framed U.S. flag which they carried with them into space on the Gemini IV mission. The presentation was made at White House ceremonies honoring the astronauts and Charles W. Mathews, manager of the Gemini Program, June 17, 1965.

Flight Control Division: Catherine L. Arteberry, and Karen D. Thomas.

Mission Planning and Analysis Division: Martin L. Alexander, and Robert N. Hinson.

Flight Support Division: Travis M. Miller, William E. Powell, and William G. Pratt.

Gemini Program Office: Gemini Program Office: Emily H. Grow (Cape Kennedy, Fla.). Apollo Spacecraft Program Office: Robert J. McAuley. (Bethpage, N.Y.) White Sands Operations (New Mexico): Walter E. Bains, and Barbara A. Woodard.

### Get Your Tickets Now!



SOUTH OF THE BORDER—Dorothy Szopski pantomimes a record in preparation for her act in "Vaudeville Revisited '65." Performances are scheduled July 16, 17, 18 in the Bldg. 1 Auditorium.

# Langley Facility To Explore, Develop Lunar Rocket Landing Techniques

The Lunar Landing Research Facility, a controlled laboratory for exploring and developing techniques for landing a rocket-powered vehicle on the Moon, has been put into operation at NASA's Langley Research Center, Hampton, Va.

The \$3.5-million facility includes a rocket-powered piloted flight test vehicle which is operated while partially supported from a 250-foot high, 400-foot long gantry structure to simulate the one-sixth earth gravity of the Moon in research to obtain data on the problems of lunar landing.

Donald E. Hewes, head of the spacecraft research branch of Langley's Space Mechanics Division, said that test vehicle and gantry systems checks have been completed satisfactorily and NASA pilots are now beginning data-gathering flights at the research facility.

The vehicle, designed primarily as a multipurpose flight-test bed, is not an exact replica of the Apollo lunar excursion module which will actually land on the Moon—but has essentially the same flight characteristics as the LEM. It provides, with proper adjustments, the same performance, control

characteristics, and cockpit visibility.

There is a two-man pilot compartment in the vehicle, but only one pilot who occupies the seat on the right is required in the current preliminary flight research program, which is concerned mainly with the handling qualities of the craft in simulated lunar landings.

In the initial research flights with the test vehicle, which is equipped with hydrogen peroxide rocket motors to provide the main thrust and attitude control, a Langley pilot will maneuver the vehicle from the ground below the gantry to a hovering position, then fly it forward in simulated lunar landings.

The test vehicle is designed for flight at forward speeds up to about 17 miles an hour within the confines of the overhead structure, which provides travel of 400 feet down range, 50 feet cross range, and 180 feet vertically.

The research program planned through use of the Lunar Landing Research Facility will include a systematic variation of the vehicle control characteristics, cockpit visibility, flight instrumentation and piloting techniques. For some tests, the cockpit will be modified to duplicate the actual LEM design features.

Data obtained through opera-

tion of the lunar lander will supplement other scientific research at Langley in an extensive program in support of the Apollo mission. These include research on the problems of re-entry, launch vehicle dynamics, spacecraft structures, lunar orbit and landing approach, rendezvous and docking, walking and performing various tasks on the surface of the Moon, and many other studies conducted through use of simulators, wind tunnels, and specialized laboratories.

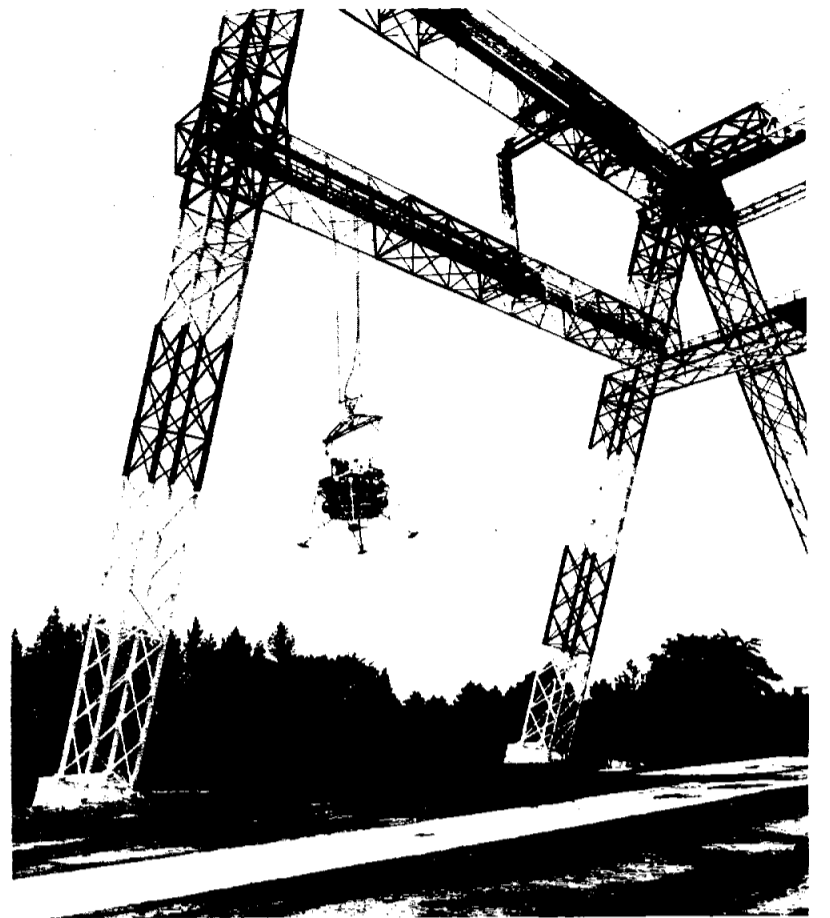
In the operation of the Lunar Landing Research Facility, a vertical lifting force equal to five-sixths of the flight vehicle's weight is applied by two cables to oppose the pull of Earth's gravity and simulate the one-sixth gravity at the Moon's surface. The cables are attached to a servo-controlled hoist system in a dolly unit mounted under the traveling bridge; the hoist system is controlled automatically by load cells in each support strut.

As the flight vehicle moves down range or cross range in response to the pilot's controls, the bridge and dolly respond to signals from the vehicle and from cable angle sensors at the top of the cables so as to stay directly over the vehicle at all times and keep the cables vertical. The bridge and dolly system are hydraulically driven to

provide a very responsive servo-controlled system.

Safety features are provided in the facility to prevent the vehicle from crashing or the

bridge and dolly from overrunning their tracks in the event of malfunction of equipment or the pilot exceeding the safety limits of the system.



RESEARCH FACILITY—The Lunar Landing Research Facility at the Langley Research Center is 250 feet high and 400 feet long, providing a controlled laboratory in which NASA scientists will work with research pilots to explore and develop techniques for landing a rocket-powered vehicle on the Moon, where the gravity is only one-sixth as strong as on Earth.

## Awards

(Continued from Page 3)

tions governing such holidays or an exception, and one announcement be published yearly listing this." \$25, intangible—limited.

Robert W. Langsdon, Resources Management Division, "that one-size seat belts in the rear seats of MSC taxis be shortened." \$25, intangible—safety.

Sally J. Yschek, Resources Management Division, "that the newspaper racks in Building 2 be relocated." \$25, intangible—safety.

Betty S. Feddersen, Flight Crew Support Division, "entry of TDY information on Time and Attendance Cards" (A rubber stamp is being prepared for use by T&A clerks.). \$25, Intangible—limited.

Ernst F. Germann (2), Guidance and Control Division, "(1) Procedure for the Apeco Company to replace illegible copies reproduced on the Apeco machine." \$15, intangible—limited. "(2) That a procedure be initiated to provide for reporting poor quality or substandard supplies and equipment in use by the Government." \$15, intangible—limited.

Charles D. Haines, Propulsion and Power Division, "that MSC provide a book for recording engineering information." (The principle of this suggestion has been adopted and a book for recording technical information will be made available for optional use.). \$15, intangible—limited.

Wayne E. Koons, Landing and Recovery Division, "that action be taken to preclude injury to our employees as a result of locked, unmarked glass doors throughout MSC." \$25, intangible—safety.

## Extravehicular Activity Development Team Presented Award



GROUP ACHIEVEMENT AWARD—Members of the Gemini IV extravehicular activity (EVA) development team hold framed certificates of the Group Achievement Award that was presented to them June 25 by Dr. Robert R. Gilruth, director, Manned Spacecraft Center. The award was presented in appreciation for the team's work in developing extravehicular capabilities for American astronauts as demonstrated during the Gemini IV

flight when Astronaut Edward H. White II, egressed from the spacecraft and spent 21 minutes in space. Receiving the award from Dr. Gilruth are: (l. to r.) Marlin L. Bopp, Engineering Division; Jack Kinzler, Technical Services Division; John W. Conlon, Flight Safety Office; Reginald Machell, Office of Spacecraft Management; Harold I. Johnson, Flight Crew Support Division; and James V. Correale Jr., Crew Systems Division.

# Borman, Lovell, Prime Crew For 14-Day Gemini Mission

Astronauts Frank Borman and James A. Lovell Jr., have been assigned as the prime flight crew for the Gemini VII mission scheduled for the first quarter of 1966.

The backup crew for the flight of up to 14 days consists of Astronauts Edward H. White, II and Michael Collins.

Borman and Lovell were the backup crew and White was the pilot for the Gemini IV mission. The command pilot on that flight, Astronaut James A. McDivitt, has been assigned as a spacecraft communicator for the Gemini V flight.

Borman is command pilot for the Gemini VII mission, and

White is command pilot in the backup crew. Collins is the first of the third group of astronauts named in October 1963, to be assigned to a flight crew.

Actual flight duration of the Gemini VII mission will depend on experience from earlier flights and the progress of the mission itself.



FRANK BORMAN, command pilot.



JAMES A. LOVELL JR., pilot.

## Space News ROUNDUP! SECOND FRONT PAGE



MICHAEL COLLINS, backup pilot.



EDWARD H. WHITE II, backup command pilot.

### Cost Reduction

## Slogan And Symbol Contest MSC Winners Announced

The MSC portion of the NASA cost reduction symbol and slogan contest held the final judging June 24 with the winners being awarded cash prizes at ceremonies June 28 in Building 1.

In the slogan contest the winners and prizes were: 1st Prize—Marilyn J. Bocking, \$150; 2nd Prize—Lyle D. White, \$75; and 3rd Prize—Jefferson R. Lindsey, \$25. Runner-ups were Donald K. Norling and Norbert B. Vaughn.

Winners in the symbol contest were: 1st Prize—Stanley R. Richards, \$150; 2nd Prize—Frederick A. Zito, \$75; and 3rd Prize—A. Inez Donaway, \$25.

Runner-ups were: John David Rosen and Herbert W. Klause.

Runner-ups will receive a silver personalized money clip.

MSC employees submitted 393 entries in the contest.

First place winners will have their entries entered in the NASA Hq contest in Washington. Winners of the Hq contest will each receive \$500 and an expense paid trip to Washington.

### 350-Million Miles In 228 Days—

## Mariner To Be 5,600 Miles From Mars On Its Fly-By Photo Mission Next Week

The best available vantage point for viewing the planet Mars is scheduled to occur July 14 as the Mariner IV spacecraft passes within 5,600 miles of that planet.

Earth and Mars in their separate orbits around the Sun are never closer than about 35-million miles and this occurs only once in 15 years. The last time was in 1956 and the next

close approach will be in 1971.

According to Dr. William H. Pickering, director of Jet Propulsion Laboratories, where pictures sent back by Mariner IV will be received, there will not be a dramatic 15 minute event such as the Ranger impact on the Moon, where a succession of photographs were transmitted back to Earth.

He said this is going to be a much more leisurely event, but will of course include a number of events of considerable interest and importance.

Dr. Pickering stated that the arrival in the vicinity of the Planet Mars is not the completion of the Mariner IV experiment, that the spacecraft will fly past the planet and continue in an orbit around the Sun as an artificial planet. Much of the data concerning the encounter will be received in the days and weeks following the encounter, so that the experiment does not terminate July 14, but continues for some weeks thereafter.

The 574 pound, 9.5-foot tall Mariner spacecraft will photograph areas on the Martian surface and measure certain physical characteristics of the planet. These will be recorded for later transmission to Earth.

Approximately 24 minutes is the length of time that the entire picture taking sequence lasts and it will take 12 minutes for

the signal to travel from the spacecraft to Earth.

JPL scientists expect to receive 21 pictures from the spacecraft and transmission time for each photo will be eight hours and 35 minutes. Along with other data to be transmitted back, the operation will take at least 10 days to get a complete set of photos. The JPL scientists say they intend to play the pictures back from the spacecraft twice.

A primary network of three tracking stations will receive the transmission from Mariner. They are Johannesburg, South Africa; Goldstone, Calif; and Woomera, Australia.

The photographs to be taken by Mariner of Mars will cover less than one per cent of the planet's surface.

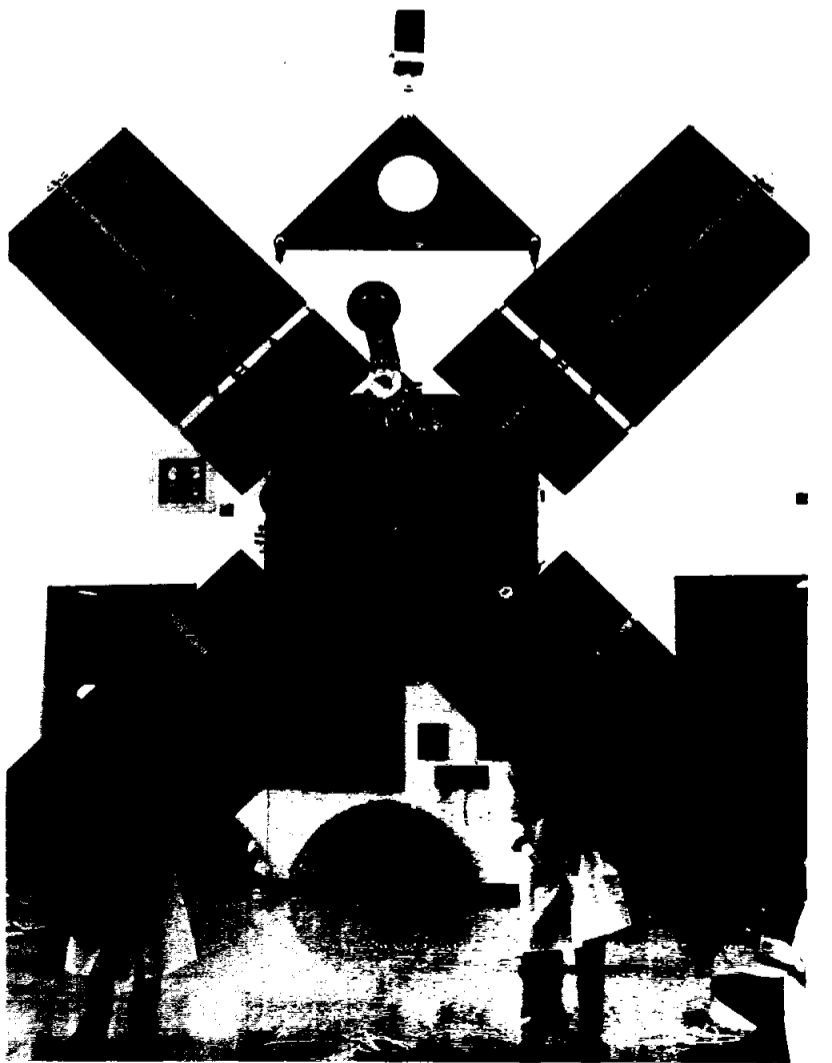
Photographs taken by Mariner will not be as plain to the layman as the Ranger photographs. The Ranger photos had 1,100 lines on their TV scan, while the Mariner photos of Mars will have only 200 lines.

Launch date of Mariner IV was Nov. 28, 1964 and when the spacecraft arrives in the vicinity of Mars it will have traveled about 350-million miles and be about 150-million miles from the Earth. A total time of 228 days will have elapsed since the launch and its scheduled encounter with Mars, July 14.

### Get Tickets Now



MODERN DANCE—Betty Hoyland practices her modern jazz interpretation at a rehearsal for "Vaudeville Revisited '65," to benefit Freeman Libraries. Performances are at 8 p.m., July 16, 17, 18, in the MSC Auditorium.



MARINER SPACECRAFT—The solar panels for the Mariner spacecraft are shown extended during assembly of the Mars vehicle. The four solar panels are each 71.4 inches long and 35.5 inches wide. Mariner was designed and built by NASA Jet Propulsion Laboratory in Pasadena, Calif. Launch date for the Mars flight was Nov. 28, 1964.