

Space News **ROUNDUP!**



INFORMATION IS PASSED OUT at the Aerojet booth at Rice Memorial Center prior to MSC's Second Space Industry Symposium at Rice University last Wednesday.

Symposium Told Of MSC Impact

An expected rise of almost \$1 million in the Manned Spacecraft Center's monthly payroll in the next eight months was reported to space industry representatives attending the Second Space Industry Assistance Symposium in Houston on July 30.

The symposium, held on the Rice University campus, was co-sponsored by MSC and the Houston Chamber of Commerce, in cooperation with Rice University.

With the increase, the local monthly payroll of approximately \$2.3 million is expected to reach \$3.2 million by next April, the group was told by Dave W. Lang, chief of the procurement and contracts division at MSC.

In addressing the 1,100

aerospace industry representatives, Lang said, "The average basic salary for all Manned Spacecraft Center employees is \$8,500."

"The industrial support payroll stands at \$27 million per year locally and is expected to reach \$45 million next year," Lang said.

The spacecraft center has \$7.7 million in active contracts in the Houston area now. Area concerns have gotten more than \$12 million in contracts since the center moved here, Lang added.

Classes were conducted by MSC officials for the aerospace industry representatives to tell them how the center does business, with whom and why.

In addition to the money that the spacecraft center spends here itself, it attracts some 300 business representatives each month from throughout the country.

"If these out-of-town visitors spend a minimum of \$15 per day, it adds up about \$100,000 more in revenue each year to the growing impact of MSC," Lang said.

Of the \$76 million in active contracts for center construction at Clear Lake, approximately 70 per cent is subcontracted and a large percentage of this goes to Houston firms, Lang told the group.

Thirty-three of the 44 subcontracts awarded by one of the construction combines went to Houston firms.

While much of Lang's address told of the benefits to the Houston area, he stressed that the nation's space program is truly a national program.

He pointed out that MSC is only one of many centers.

Among those that Lang named were the Massachusetts Institute of Technology which is directing a group of contractors working on the guidance and navigation systems for the Apollo spacecraft, the

(Continued on page 2)

Sun Is Orbited By Mariner II On August 1st

The Mariner II spacecraft, which successfully performed a fly-by mission of the planet Venus on Dec. 14, 1962, completed its first orbit of the sun August 1.

Mariner II, a project of the National Aeronautics and Space Administration and its Jet Propulsion Laboratory, Pasadena, Calif., was launched Aug. 27, 1962, and traveled a distance of approximately 540,000,000 miles to complete the first solar orbit.

The current position of Mariner in space is outside the orbit of Earth at a straight line distance of 47,000,000 miles from Earth below the plane of the Earth's orbit and ahead of Earth. Although its trajectory towards Venus was inside Earth's orbit, the path of the spacecraft was altered by the gravitational pull of Venus as Mariner performed the fly-by. The closest approach to Venus was 21,648 miles.

The current velocity of the spacecraft is 54,200 mph relative to the Sun. The velocity figure increases and decreases during the solar orbit to produce a period of 346 days for each

(Continued on page 2)

Computer Equipment Contract Goes to IBM

Manned Spacecraft Center has signed a contract for \$36,200,018 with International Business Machine Corporation to implement the computing and data processing center of future manned space flights.

The real time computer complex will be located on the ground floor of the Integrated Mission Control Center at MSC's future home at Clear Lake, Texas. It is from this center that MSC will control and monitor all future missions in the manned space flight program beginning with Gemini's first rendezvous flight.

Four IBM 7094 computers, and related computing equipment will monitor and analyze data from Gemini missions, the first attempt to rendezvous in space, and future Apollo flights.

IBM's responsibility under the contract include the design of the computing center, mission and mathematical analysis, programming, equipment engineering, computer and program testing, maintenance and operation, and documentation for the real-time computer complex.

IBM will also be responsible for the launch trajectory data system and for the transmitting and processing of guidance data between Cape Canaveral, the Bermuda tracking station, instrumentation ships,

and the Mission Control Center.

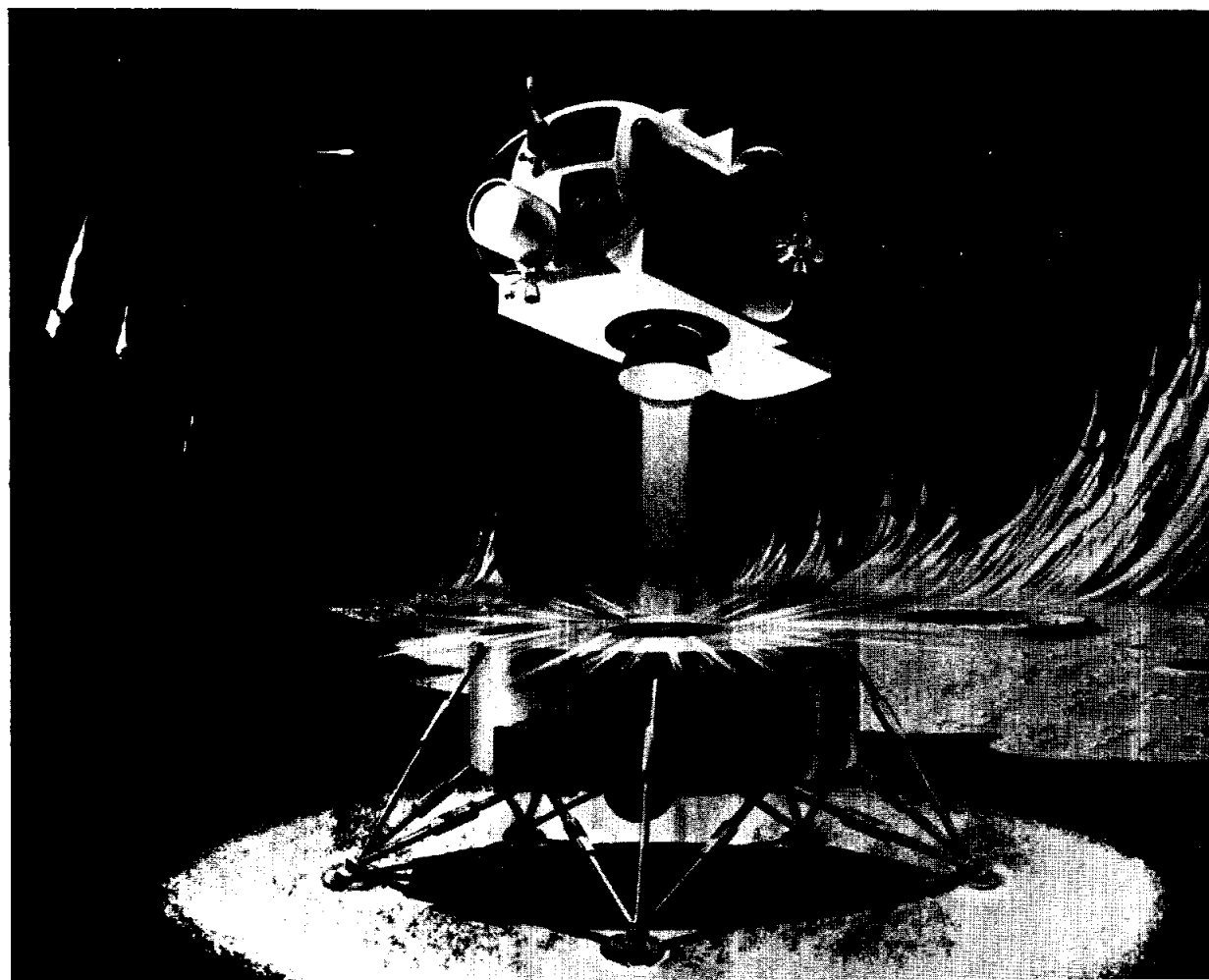
Two 7094 computers are now installed in IBM's interim facility in Houston. A third computer will be delivered by IBM in September. When the Center at Clear Lake is completed, the facility will be moved to its permanent location. The fourth computer, to be delivered after the move, will complete the real time computer complex.

Mercury Workshop Held At Canaveral

The highly reliable Mercury-Atlas space program was attributed to managerial techniques for obtaining quality work, representatives were informed at a recent Reliability Workshop held at Cape Canaveral.

Attending the one-day workshop, cosponsored by the Air Force, NASA and General Dynamics/Astronautics, were 300 management officials from 40 major aerospace companies.

G. Merritt Preston, (Continued on page 2)



GRUMMAN AIRCRAFT Engineering Corporation has awarded Textron's Bell Aerosystems Company a subcontract to design and build the ascent rocket engine, shown in this drawing powering the Lunar Excursion Module (LEM) from the surface of the moon.

Bell Aerosystems Co. Is Awarded Contract To Develop Ascent Rocket Engine for LEM

Textron's Bell Aerosystems Company has been awarded a major subcontract by the Grumman Aircraft Engineering Corporation of Bethpage, N.Y., to develop the ascent rocket engine for the Lunar Excursion Module (LEM) of Project Apollo.

President William G. Gisel of Bell Aerosystems announced receipt of the \$11.2 million subcontract from Grumman today. He said Bell will design, fabricate, test and deliver rocket engines that will be used by Project Apollo astronauts to launch their Lunar Excursion vehicle from the surface of the Moon for the return trip to the orbiting Apollo spacecraft.

Gisel said the development program for the LEM ascent engines will begin immediately. No increase in employment at Bell is expected at this time as a result of the Grumman subcontract, he added.

The LEM is one of three modules being developed for the Apollo spacecraft. The other two are the command and service modules.

Project Apollo will use the Lunar orbit rendezvous technique to accomplish the Lunar landing mission. Employing this technique, the three-module spacecraft is injected into a translunar trajectory.

Mid-course maneuvers will be performed by the astronauts to place the spacecraft in position for entry into a precise, circular orbit, about 100 miles above the Lunar surface.

At the proper time, two of the astronauts in the LEM will separate from the command and service modules and land on the Moon's surface.

The third crew member will remain in the orbiting command module. The men may remain on the Moon up to two days for scientific observations and investigations.

When the astronauts have accomplished their mission, the Bell ascent engine will power the LEM for launch from the Moon into a trajectory leading to a rendezvous with the orbiting command and service modules. The lower section of the LEM will serve as the launching platform and remain on the Lunar surface when LEM takes off to rejoin the command and service modules.

After the LEM docks with the spacecraft, the crew and the specimens they collected on the Moon will transfer to the command module for the two and one-half day journey back to Earth. The LEM then will be separated from the spacecraft and remain in Lunar orbit.

The LEM ascent engine program is the second major subcontract Bell Aerosystems has received this year for work on Project Apollo. In February, the Space and Information Systems Division of North American Aviation selected Bell to provide the positive expulsion tanks for the reaction control system of the command and service modules.

Mercury Workshop

(Continued from page 1)

manager, Manned Spacecraft Center Operations, Cape Canaveral, said that the workshop was conducted in an effort to transfer the managerial know-how from Project Mercury to future space programs. Preston was chairman of the two hour session on test control.

The significance of motivation at all working levels was repeatedly emphasized as a contributing factor to the success of the program.

One of the conclusions of the workshop was that the Mercury-Atlas management techniques used in developing manned space systems could be fruitfully applied to future space programs.

NASA Mercury Operations Chief, Walter C. Williams said that for all its technical importance the Mercury program was equally significant as a management exercise to originate new techniques in developing manned space systems.

"The strong sense of responsibility for human life is a major reason for 100 per cent reliability of the Mercury-Atlas manned vehicles," J. R. Dempsey, president of GD/A said. He noted when astronauts toured GD/A and talked to workers about their jobs, the improvement in the quality of work was immediate and dramatic.

command and service modules of the Apollo.

Each of these prime contractors have many subcontractors and they all have many suppliers of material and equipment of almost every type, Lang concluded.

Speaking from experience, Mercury-Atlas managers discouraged uncontrolled trouble-shooting, quick fixes, and improvised modifications. Everything that may alter the hardware must receive the benefit of top design talent if reliability is to be assured.

To capitalize on the weapon system background of Atlas, program management insisted upon rigid control of design changes.

Mariner

(Continued from page 1)

orbit. Aphelion, farthest distance from the Sun in the orbit, is 113.8 million miles and occurred on June 18, 1963. Perihelion, closest point to the Sun, is 62.5 million miles and occurred on Dec. 27, 1962.

Data radioed to Earth as Mariner's instruments probed Venus, determined that the planet's surface temperature is 800 degrees F. with a temperature of -30 degrees F. to -70 degrees F. at the top of the clouds that shroud the planet.

The clouds begin at 45 miles above the surface of Venus and extend to 60 miles. The total mission yielded 111 million bits of information on interplanetary space and Venus.

Contact with the spacecraft was lost on the 129th day of the mission, Jan. 3, 1963, at a distance from Earth of 53.9 million miles and 5.7 million miles beyond Venus. Although it was expected that the mission would be terminated after the fly-by of Venus, the cause of the loss of contact is unknown.

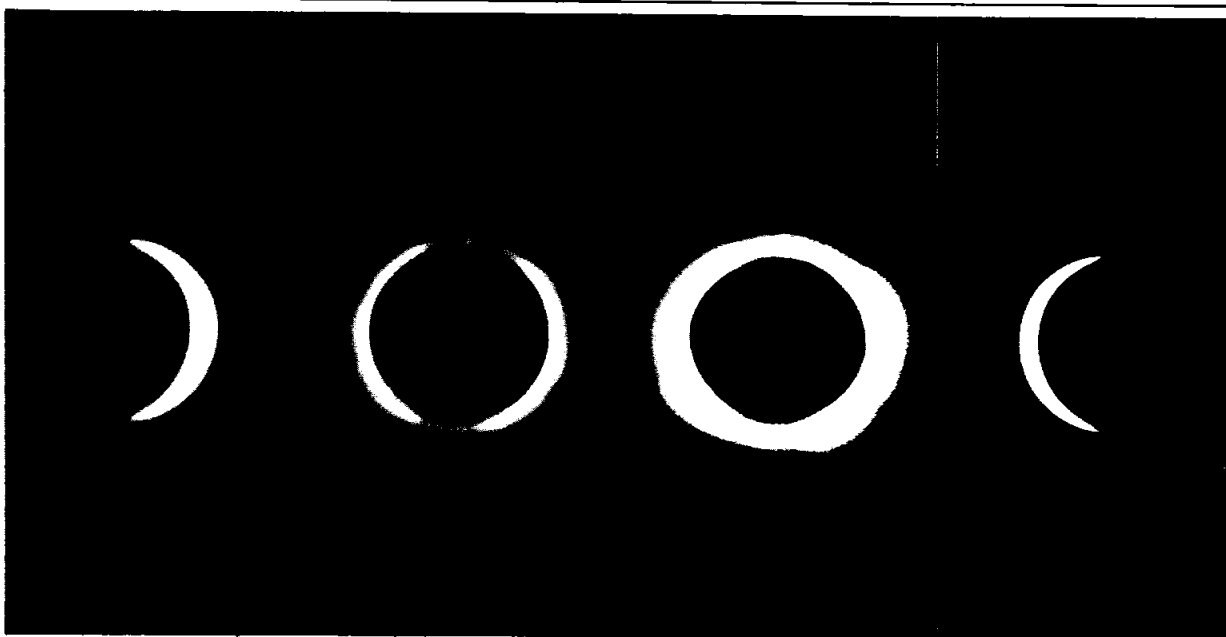
Symposium

(Continued from page 1)

Grumman Aircraft Engineering Company on Long Island which has been awarded the contract for the lunar landing spacecraft.

Also the McDonnell Corporation in Saint Louis, builder of the Mercury spacecraft and now at work on the Gemini spacecraft.

The North American Aviation Company at Downey, Calif., now working on the



THE SHORT, SPECTACULAR LIFE of an eclipse of the sun was recorded on film by a Douglas Aircraft Company photographer aboard a DC-8 flying jet observatory over Northern Canada July 20. The sequence, from a partial eclipse through totality to a partial eclipse, covered a time period of about one hour. The first photo shows the crescent sun about 30 minutes before the moon blotted it out entirely. Totality (photos 2 and 3) made visible the sun's mysterious corona, the halo-like light appearing to surround the black disc of the moon. From the DC-8, which carried scientists of the National Geographic Society-Douglas Solar Eclipse Expedition into the moon's shadow, totality lasted 142.4 seconds. Observations from the ground were limited to maximum of 100 seconds. The aircraft, a Delta Air Lines DC-8 turboprop jet, flew at 525 miles per hour at 40,100 feet altitude. The expedition intercepted the shadow cone at 37 minutes and 11 seconds after 1 p.m. (PDT) and raced with it until the sun escaped from behind the fast-moving shadow at 1:39:33.4. The final photograph was made nearly 30 minutes after the total eclipse. Members of the party included Astronaut M. Scott Carpenter and Dr. Jocelyn Gill, NASA Headquarters.

Berry Replaces Col. Berry As MSC Medical Officer

Dr. Charles A. Berry, Chief of the Manned Spacecraft Center Medical Operations Office, has resigned his commission as Lieutenant Colonel in the U. S. Air Force to accept Civil Service appointment to the MSC position.

Dr. Berry has been on loan to the National Aeronautics and Space Administration for assignment to organize the MSC Medical Operations Office since July 1, 1962. One of the Medical Operations functions is that of flight surgeon to the astronauts.

MSC Director Robert R. Gilruth said establishment of the Medical Operations Office chief's position as a Civil Service post is felt to be necessary to assure continuity of personnel in the position.

The Medical Operations Office has the responsibility for all medical, health and safety aspects of the Center's operations, including flight missions.

As the incumbent chief of the office, Dr. Berry was offered the post under Civil Service and accepted the appointment, resigning his commission for this purpose.

A veteran of 15 years of military service, including three years during World War II, Dr. Berry was rated as a Senior Flight Surgeon with the Air Force and was qualified as a "Space Surgeon" in 1960.

Dr. Berry obtained a Bachelor of Arts degree in 1945 from the University of California at Berkeley, and was awarded a Doctor of Medicine degree from the University of California Medical School in San Francisco in 1947.

Dr. Berry is a member of the American Medical Association, the American Academy of General Practice, the AIAA and the Association of Military Surgeons. He is on the Aerospace Medicine Committee of the American Medical Association. He is a Fellow of the Aerospace Medical Association, a member of the Space Med-

icine Branch of that Association, and a member of the Committee on Aviation Health and Safety. He is a Fellow of the American College of Preventive Medicine. He is a member of Delta Omega (Honorary Public Health Society) and Nu Sigma Nu, and is an Associate Fellow of the American College of Physicians. He is a member and is on the Board of Governors of the Society of USAF Flight Surgeons.

On April 26, 1961, he was presented the Arnold D. Tuttle Award for his articles on original research published in *Aerospace Medicine* in 1959 and 1960.

On February 9, 1962, he was awarded the USAF Certificate of Achievement in recognition of outstanding qualifications in the speciality of Aviation Medicine. Dr. Berry has been author or co-author of nearly 30 aerospace medical papers and several chapters of book length works.

Beacon

(Continued from page 8)

inclined 80° to the equator, at an altitude of about 600 miles. In this type of orbit, the Earth will rotate under the satellite thus permitting the satellite to view each area of the Earth's ionosphere every 24 hours.

NASA will inform experimenters of the times when the satellite is expected to be within range of their stations. Instruments can then be turned on to record how certain radio emissions from the satellite change as they pass through the ionosphere.



ROBERT BILDERBACK of MSC's Instrumentation and Electronic Systems Division is shown above conducting a test check on laser transmittal equipment.

Unit That Transmits Voice Via Laser Light Waves Is Being Developed In Lab By MSC Physicist

An innovation in the transmission of the human voice, via light waves, utilizing a gallium arsenide diode has been developed in laboratories here at the Manned Spacecraft Center.

A working model of the amplitude modulated laser transmitter has been built by Robert R. Bilderback, physicist in the Microwave and Optical Systems Section in the Electromagnetic Systems Branch of the MSC Instrumentation and Electronic Systems Division.

The perfection of this or similar systems will aid in space transmission by concentrating the radiated energy output into a narrow beam and permitting signals to be sent farther with less power.

Assisting Bilderback in the experiment are Douglas Lilly, summer employee from North Carolina State and Edgar Walters, co-op student from the University of South Florida.

The gallium arsenide laser action was first observed by scientists during the later part of 1962. From there the push has been to develop systems using this new material.

Bilderback first began experimenting with the gallium arsenide diode in May, applying it to an optical communications system and the first working model was completed early in July.

The primary transmitting element and heart of the system is a gallium arsenide diode which emits radiation when a current of sufficient magnitude is conducted through it.

A peak current of 50

amperes in time intervals of one millionth of a second, 5,000 times per second, is conducted through the diode which in turn emits radiation (light) at the junction between the positive and negative type gallium arsenide. This light is projected through a conventional type quartz lens.

Due to the necessity of dissipating a relatively large amount of energy (heat) over a short period of time, the laser is immersed in liquid nitrogen coolant (-196 degrees centigrade).

The emitted radiation, which is just above the visible spectrum of 8400 angstroms, (light wave unit of measurement, 100-millionth of a centimeter) is transmitted a little over 10 feet in the lab to the receiver.

The receiver consists of a lens system that gathers and focuses the light on a photomultiplier receiving tube (detector) and from there goes through several

stages of amplification, and processing and then to a speaker.

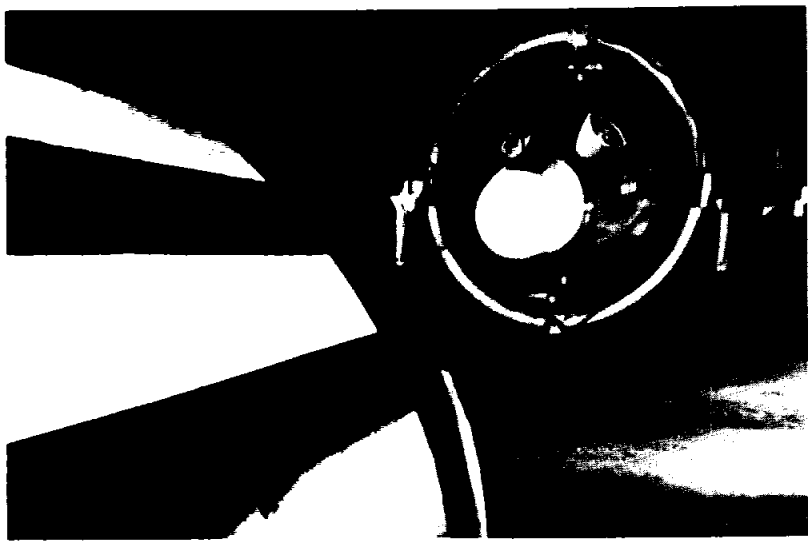
Simultaneously the audio impulses go into an oscilloscope and are visually displayed.

The next step is to refine the model for field testing and Bilderback expressed confidence that transmission can be made for several miles under ordinary atmospheric conditions.

Also on the agenda is developing a system to eliminate the liquid nitrogen coolant.

Another eventual step is to modulate the laser with video transmission.

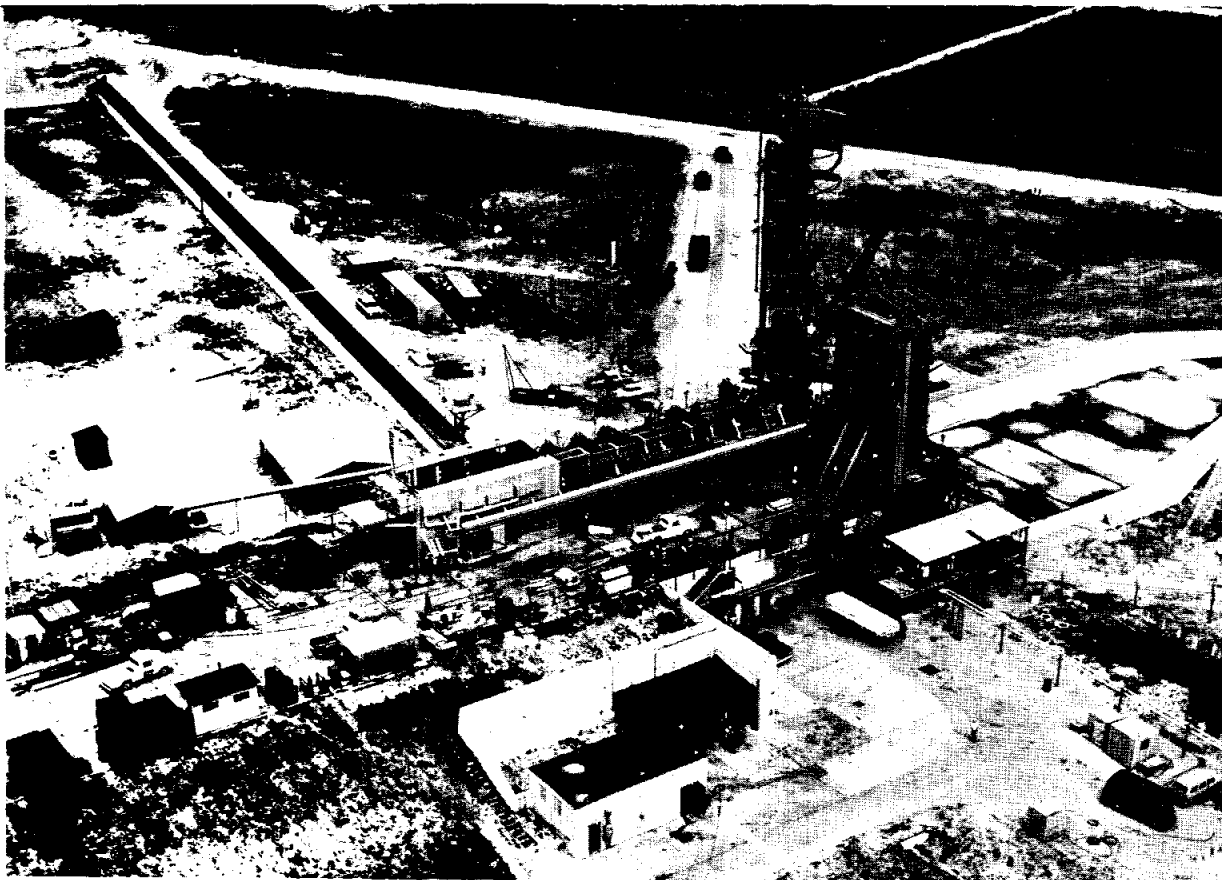
Bilderback, a native of Kilgore, Tex., was graduated from the University of Houston with a BS in physics and mathematics and has done graduate work in this field at the University of Alabama, Huntsville Center. He also has done special work in optics at the University of Rochester in New York.



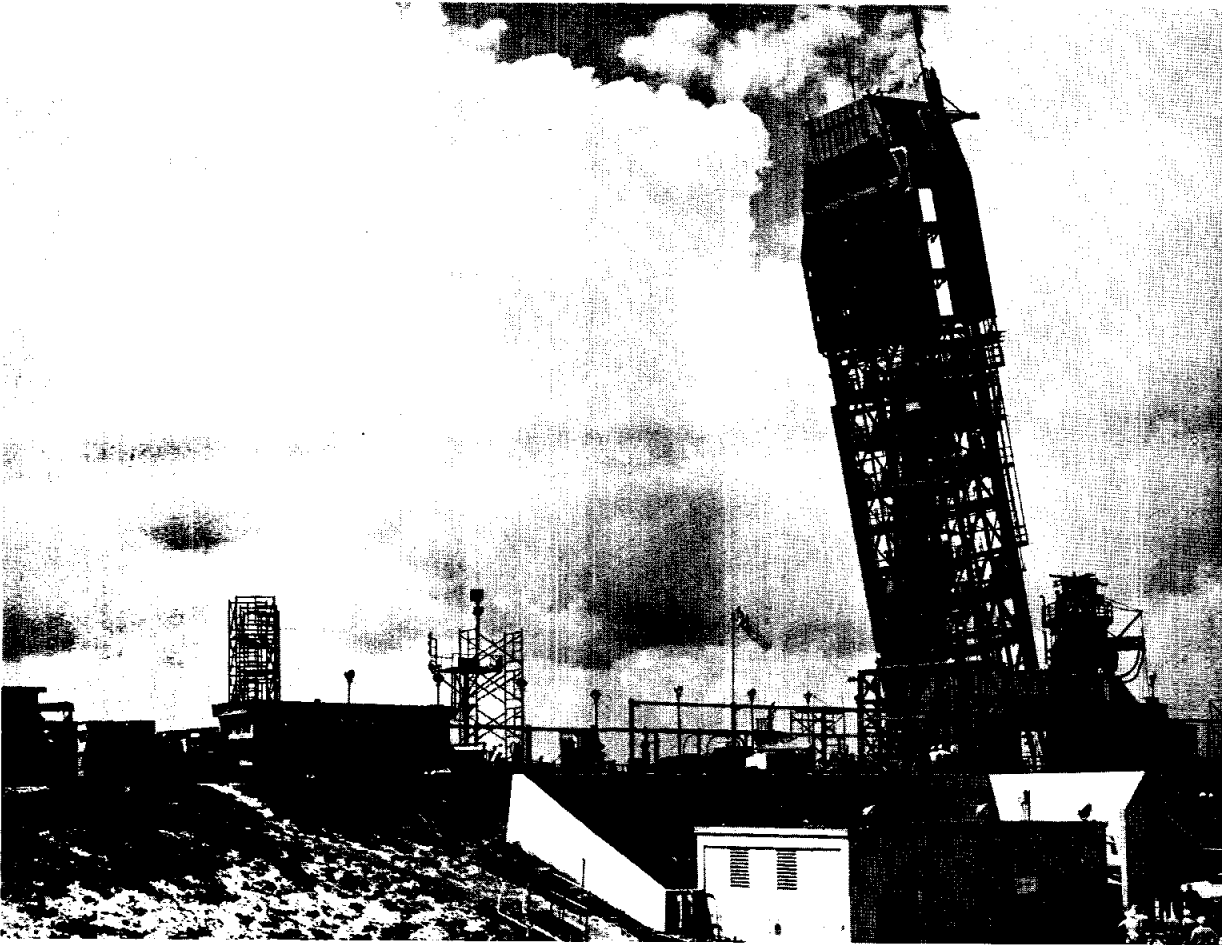
GEMINI DOCKING—Two research pilots operate controls in a full scale model of Gemini, to bring the spacecraft into gentle final contact with the Agena rocket engine (foreground) as both travel on cables from an overhead track. This Space Vehicle Rendezvous Docking Facility at the NASA Langley Research Center is used to simulate the final 200 feet of a rendezvous and joining in space by two orbiting vehicles.



EDGAR WALTERS, left, and Doug Lilly are shown with oscilloscope equipment during the laser transmission test.



CLOSEUP AERIAL VIEW shows Pad 19, GEMINI launching complex, with erector in horizontal position. Martin Company's TITAN II, to be used as GEMINI Launch Vehicle, will be tested in separate stages on the pad, then mated and erected in the launching position.



WHITE ROOM AT PAD 19, the GEMINI launching complex on Cape Canaveral, is erected in practice along with the TITAN II tower. First GEMINI-TITAN II launch vehicle will be erected within the tower, which lifts from a horizontal to a vertical position.



UNDERGROUND CABLEWAY connecting blockhouse to launching pad has been completed by Martin Company for Pad 19, the GEMINI launching complex at Cape Canaveral. Throughway permits inspection of vital cablework.

Martin Marietta Corp.

Martin Company's role as one of the Manned Spacecraft Center's family of industrial contractors has so far been largely its participation in the GEMINI program.

Martin Space Systems at Baltimore is contracted to the Air Force Space Systems Division to provide modified TITAN II ICBMs for use as the GEMINI launch vehicle.

Modifications to the TITAN II are basically designed to "man rate" the ICBM into a space launch vehicle—to provide that extra margin of safety for the two man GEMINI crews.

Among the changes made to the TITAN II are the addition of a malfunction detection system and redundant flight controls.

The malfunction detection system (MDS) is patterned after the Abort Sensing Instrumentation System of the Mercury Program. Critical differences deal with the GEMINI astronauts' more active role in the decision making process.

For example, the GEMINI astronauts will monitor through digital and analog displays on their panel the "pulse" of their GEMINI-TITAN II launch vehicle before, during and in the critical moments after flight begins.

They will be able to detect pressure in fuel and oxidizer tanks, temperature at engine nozzles, and the rate of roll, pitch and yaw as the GEMINI-TITAN II bears its two man spacecraft aloft.

Only the GEMINI astronauts will be able to separate themselves in case of an impending disaster to the flight before it reaches orbit. Ground controllers may alert the two man crew to a potential abort situation. But the crew itself must initiate escape procedures.

There are several different methods which may be used for escape. On the launching pad, before engine ignition, the astronauts can eject themselves in a split second system which tears open the hatch, ignites a charge in their seats and sends them hurtling off and up to a parachute landing.

There are several different methods by which the astronauts may initiate escape. The important point is that they, and they alone, will have that decision to make, and that is the purpose of the malfunction detection system.

Outwardly, the only change that might be noticed is the addition of an adapter section to mate the TITAN II with the GEMINI spacecraft.

Martin Space Systems also has worked closely with NASA/Houston in space flight simulation.

The history of Martin Company spans the development of the technology of flight from manned aircraft to manned spacecraft.

Indeed, Martin and manned flight are almost as old as each other. The Company was established in 1909, less than six years after the Wright brothers'



WITH CAPE CANAVERAL stretching out below in this artist's concept, the Gemini-Titan II thunders skyward.



The ROUNDUP'S salute to MSC secretaries this issue goes to four well known ladies in the Gemini Spacecraft Project Office. They are:

Dora Avilez, left, secretary to Andre J. Meyer, Jr., Chief of the Project Administration Office, who is a native Houstonian. Dora is a graduate of Milby High School and attended the University of Houston. She worked for the U.S. Air Force at its Petroleum Office in Houston before joining MSC's Launch Vehicle Branch of the Gemini Project Office last August. She has been in her present position since February. Dora is the mother of a daughter, Victoria Suzanne, 8, and enjoys swimming and picnicking with her in her off-duty time.

Suzan Osborne, right, secretary to Duncan R. Collins, Head of the Office of Spacecraft Management, was born in St. Louis, Mo., where she attended elementary and secondary schools. Suzan attended Arizona University at Tempe and St. Mary's University at San Antonio, Texas. Suzan has a wide background of secretarial experience in civil service. Prior to coming to MSC she worked for the U. S. Air Force in Newfoundland and at Scott Air Force Base, Ill., and for the 4th U.S. Army at San Antonio, Texas. Her hobbies include swimming, boating, acrobatics and reading.



Jeanette Beck, lower left, secretary to Willis B. Mitchell, manager of the Launch Vehicle Integration Office, is from Poquoson, Va., where she was born and attended school. Jeanette was employed at Langley Air Force Base before she joined the engineering Division of Space Task Group in 1959. She came to Houston when the move was made last June. Her husband, Donald Black, is in sales work in Houston. They have two sons, Donald, 16, and Berry, 9. Jeanette spends her spare time with her family and playing bridge with friends.

Emily Ertl, lower right, secretary to Technical Assistants Scott H. Simpkinson and John E. Roberts, Jr., is a native of Cleveland, Ohio. She first worked for the government at Lewis Research Center with a group which included Simpkinson, Warren North, Chief of MSC's Flight Crew Operations Division; and J. S. Algranti, also of Flight Crew Operations Division. Emily had the distinction of being the first NASA female employee at Cape Canaveral when the group was transferred there after Space Task Group was formed. She transferred to Houston last October. Emily enjoys travel but finds that her leave time is most often used for return visits to Cleveland.



NASA Contracts for Abstracting Service

Research Triangle Institute, Durham, N. C., has received another extension of its contract with the National Aeronautics and Space Administration for "Reliability Abstracts and Technical Reviews." This service abstracts and evaluates literature in the areas of reliability and quality assurance. Value of the contract extension is \$58,000.

RTI for the past two years has had a team of 20 mathematicians, statisticians and scientists working under Dr. William A. Glenn, to scan some 600 books, journals, and unpublished papers. Significant items have been abstracted and, more importantly, analyzed and evaluated with respect to reliability and related fields.

The abstracts are coded under a system adapted from the American Society of Quality Control's coding procedure. Some 800 subscribers, including certain libraries and universities, receive the monthly abstracts. In addition, a limited number of bound volumes are issued annually at the conclusion of each contract increment to selected government, industrial and university libraries and to libraries of certain domestic and foreign technical societies.

The NASA abstracts developed under contract with RTI attracted overseas recognition by the International Statistical Institute, The Hague, Holland, this spring when it devoted

an entire issue of its publication to them.

Engineers, scientists and others who have a need for the NASA abstracts may request free subscriptions by letter on company or organization letterhead to NASA Headquarters, Code PE, Attn. Heyward E. Canney Jr., Washington 25, D. C.

MSC SOFTBALL

A softball league has been formed within MSC and play has started at Ellington AFB. A total of 14 teams are participating - six in a "fast pitch" division and eight in a "slow

pitch" division. Approximately 250 personnel are taking part in this activity. Following are the standings to date.

FAST PITCH

Team	Won	Lost
1	2	1
5	2	1
6	2	1
2	1	2
3	1	2
4	1	2

SLOW PITCH

Team	Won	Lost
8	2	0
2	2	1
5	2	1
6	2	1
1	2	1
4	1	1
7	0	3
3	0	3

Duplicate Bridge

The recent duplicate bridge co-sponsored by the Mercury Club and the Boeing Bridge Club at the Patrick AFB Officers Club was so well received that the schedule has been changed to hold the event every week.

Beginning this last Monday, the group will meet every Monday night at the Patrick Club at 7:15 p. m. Gentlemen must wear ties and coats. Those interested may contact Henri Kent at UL-3-4538.



HELEN RAGSDALE
Chief Operator



MARGARET BUFORD
Night Operator



MARTHA KENNY
Operator



GRETA SUTHERLAND
Operator



LORETTA ORLANDO
Operator



PAULINE WELLS
Operator



IRIS BLACKBURN
Operator



ROBERTA MUSGROVE
Operator



SHIRLEY J. ARCHER
Operator



MILDRED LILLOPOP
Operator



SHIRLEY HORN
Operator



FRANCES REID
Operator



DRUE S. STUBBS
Operator

"Hello Girls" Are Among Busiest At MSC

Hidden behind the walls of the HPC building, one of MSC's most essential and least appreciated operations is carried out by a small group of busy women.

Under the supervision of Chief Operator Helen Ragsdale and Evening Operator Margaret Buford, 12 telephone operators tie together the 14 scattered sites of the headquarters and connect it by long distance lines with all other parts of the country.

To anyone unfamiliar with a telephone switchboard, it is a bewildering and confusing array of plugs, wires, flashing lights, and clicking signals. In the midst of these distractions the girls calmly and efficiently go about their jobs of placing the hundreds of calls that fre-

quently jam the switchboard.

The central switchboard is in operation from 8:00 a. m. to 8:30 p. m. daily and is manned by eight operators. Three of the girls are required to handle long distance calls of the headquarters which total more than 8,000 a month. Five local operators handle inhouse and local calls outside of the headquarters. These exceed 60,000 each month.

Within the headquarters some 4,500 telephone instruments are in use at 1,400 main stations. With the exception of interoffice calls on the same dial series and the direct dial tie-lines to other NASA offices and government agencies, all calls, both incoming and outgoing, are

funneled through the switchboard.

Without exception the

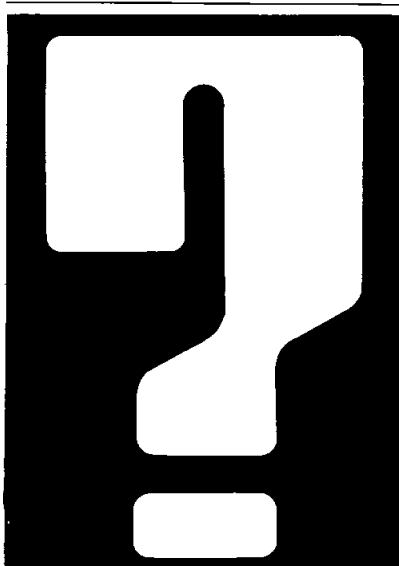
Milton Reim Now Roundup Editor

Milton E. Reim has replaced Mrs. Anne Corey as editor of SPACE NEWS ROUNDUP. Mrs. Corey left NASA employ early in July to take a position with the Indianapolis, Ind., TIMES.

Reim comes to MSC from the Air University at Montgomery, Ala., where he edited the Air University DISPATCH.

A graduate of the University of Missouri School of Journalism, he had a variety of experience in the newspaper field prior to his work at Air University.

operators have had previous telephone company or industrial switchboard experience.



SINGLETON CLUB

Call Sue Kelly, Ext. 5312 or Steve Jacobs, Ext. 5440.

Pricing Staff Office Has Dinner-Dance

The MSC Pricing Staff Office of the Procurement and Contracts Division held a dinner-dance July 20 at the Houston Executive Country Club marking the establishment of a Pricing Office two years ago at Langley Air Force Base.

Although the age of two applied to the office, the occasion also offered an opportunity to honor two staff members on their birthdays. Cakes were presented to George Elder and Frank McFarland.

Present for the occasion were Mr. and Mrs. A. E. Hyatt, Mr. and Mrs. George Collins, Mr. and Mrs. W. G. Allison, Mr. and Mrs. J. I. Papac, Mr. and Mrs. Frank Davis, Mr. and Mrs. J. A. Anderson, Mr. and Mrs. Jack Fuller, Mr. and Mrs. J. M. Hanberry, Mr. and Mrs. C. W. Westfeld, Mr. and Mrs. George Belder, Mr. and Mrs. C. Milbourn, and Miss Dorothy Baker, all of the Pricing Office.

Guests at the affair were Mrs. Grace Winn, Miss Bobette Lawrence, and William Parker, all of Houston, and Mr. and Mrs. A. Bechtel of Webster City, Ia.

Bowling Roundup

Team	Won	Lost
Garkops	21 $\frac{1}{2}$	6 $\frac{1}{2}$
Misfits	19	9
Bowlernauts	16	12
Ridgerunners	15	13
Four Nuts	14	14
No Shows	14	14
Piddlers	13	15
Ed's Coeds	12	16
Schplitz	11 $\frac{1}{2}$	16 $\frac{1}{2}$
Lame Ducks	11	17
C-Stars	11	17
Hi Gees	10	18

Hi Average, Women: Shirley Yeater, 153.

Hi Average, Men: Joe Garino, 174.

Women's Hi Ind. Game: Scratch, Shirley Yeater, 204; handicap, Hedy Stewart and Shirley Yeater, 240.

Women's Hi Ind. Series: Scratch, Shirley Yeater, 534; handicap, JoAnn Andersen, 655.

Active in Space, Aircraft Activities

epochal flight at Kitty Hawk, by an aspiring young man named Glenn Luther Martin. The first Martin aircraft to fly was built in an abandoned church at Santa Ana, California. The first flight took place on August 1, 1909, marking the beginning of Martin's long tradition of manned flight.

In 1912, the Company was incorporated formally as the Glenn L. Martin Company and operations were shifted to new and larger quarters in Los Angeles. Glenn L. Martin's company was a going concern with 14 employees, but the market for aircraft in the early days of aviation was limited.

The extension of Martin's activities into the modern technologies resulted in an expansion of its physical and technical capabilities. From the huge manufacturing complex at Middle River near Baltimore, the Company expanded its research, manufacturing and test facilities to include new divisions at Orlando and Cape Canaveral, Fla., and at Denver, Colo. The Orlando and Denver Divisions were established in 1956, the Cana-

veral Division in 1958. Meanwhile, the Middle River plant has been converted into modern facilities for the company's aerospace manufacturing, nuclear, electronic and space programs. In 1955, Martin established in suburban Baltimore the Research Institute for Advanced Studies (RIAS) dedicated to basic research in the fundamental sciences wholly independent of product development.

In recent years, Martin Company has been under the direction of a top management team headed by George M. Bunker and William B. Bergen. Mr. Bunker joined the Company on February 21, 1952, as president and chief executive officer, and was named chairman of the board in May of the same year. Mr. Bergen, who joined Martin in 1937 following his graduation from MIT, was named executive vice president in 1955 and president in 1959.

Another significant chapter of the Company's history began in October, 1961, when Martin and American-Marietta companies were consolidated

to form Martin Marietta Corporation. Mr. Bunker became president and chief executive officer of the parent corporation, and Mr. Bergen continued as president of Martin Company, an operating division of Martin Marietta.



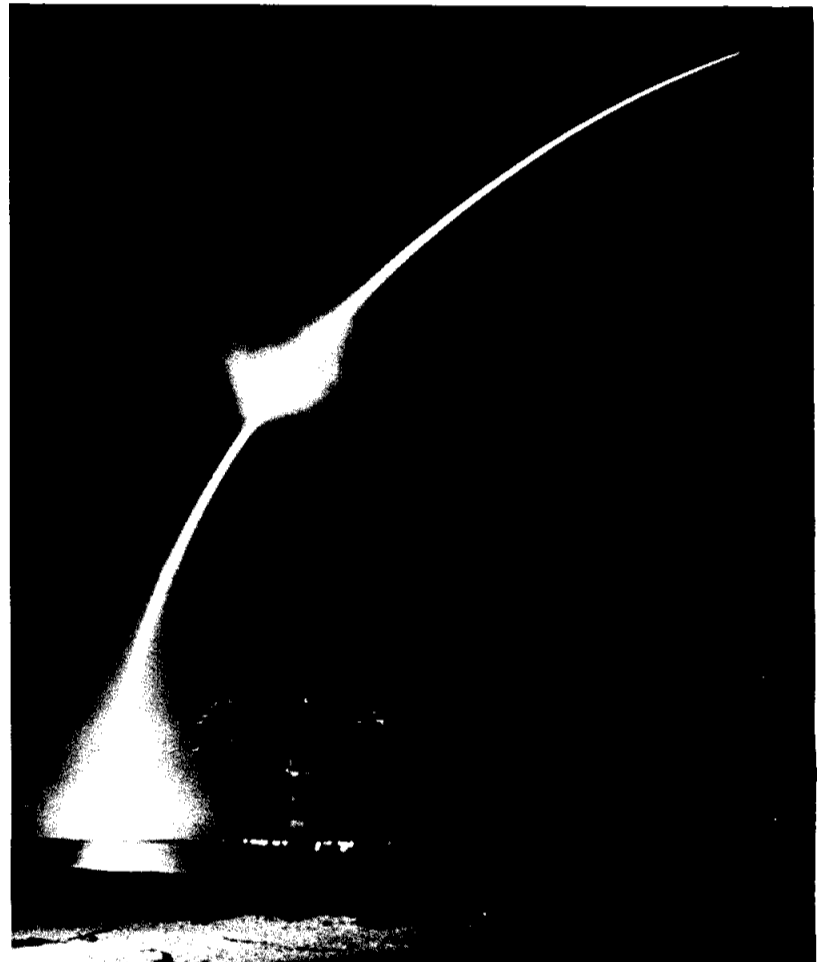
GEORGE M. BUNKER
President
Martin Marietta Corp.



WILLIAM B. BERGEN
President
Martin Company

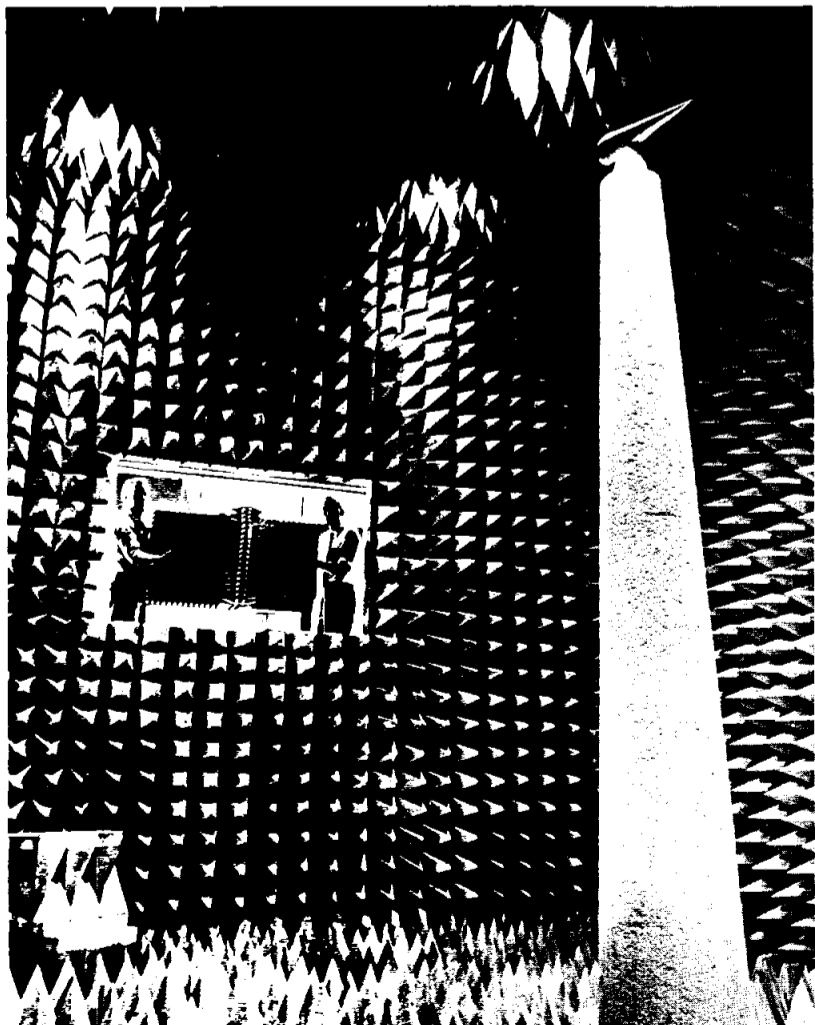


THREE CREWMEN of a full scale lunar space flight simulator can fly a realistic mission from the earth to the moon and back at the Martin Company's Space Systems Division in Baltimore. The cone-shaped spacecraft has been used by the division in studies for the National Aeronautics and Space Administration of the lunar mission.

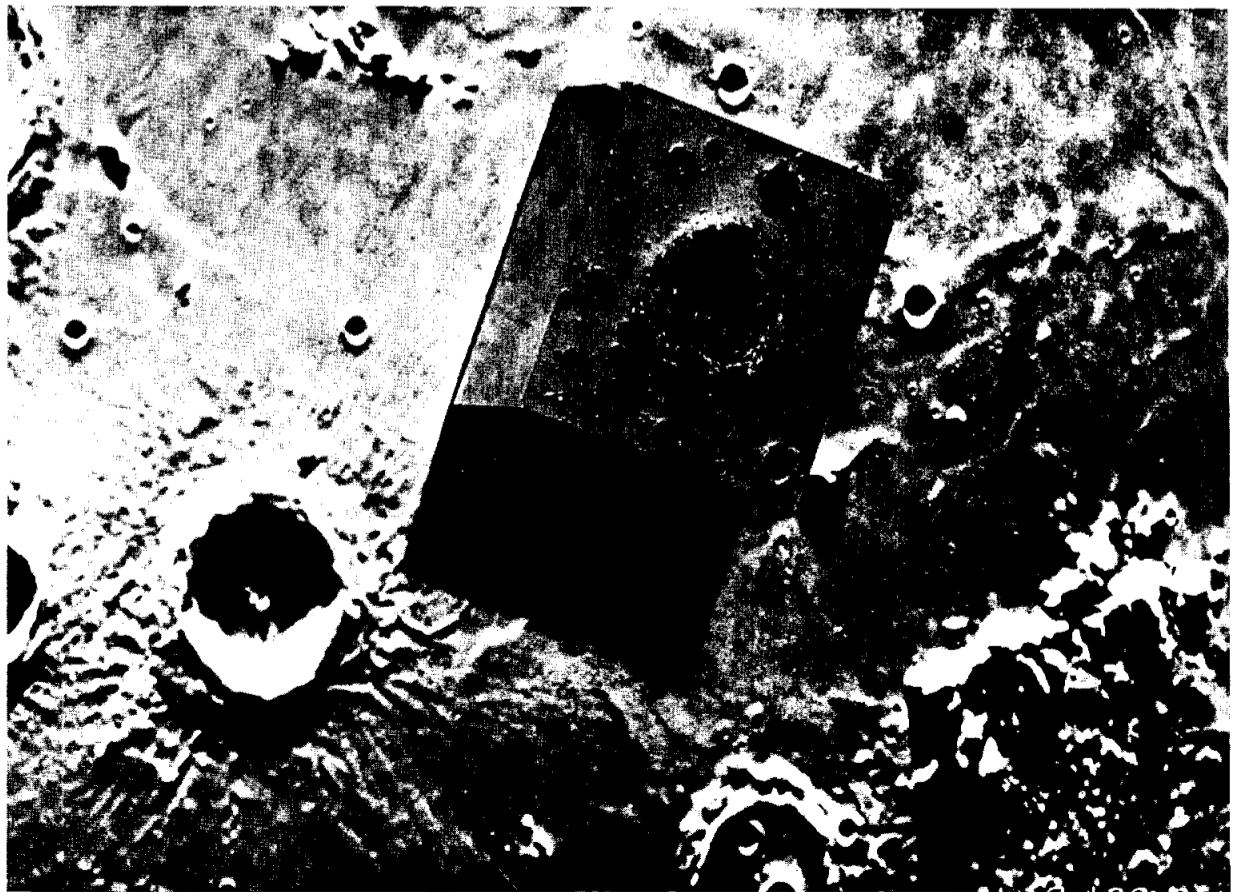


FLIGHT OF A TITAN I, first of the TITAN family of missile and space boosters, is captured at night from the backyard of a home on Merritt Island, west of Cape Canaveral. The brilliant flash is caused by the rocket's first stage engine exhaust as it passes through low clouds over the Cape.

Editor's Note: This is the tenth 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 the Public Relations Department, the Martin Company.



ANECHOIC CHAMBER is used at Martin Denver to study use of radar in identifying vehicles heading back through the atmosphere from space. Radar helps identify the re-entry vehicle by shape, pin pointing differences between warheads and decaying upper stage of a booster, for example.



CRATERS ON THE MOON and those produced by man-made experiments show striking similarity. Comparison may add weight to theory that lunar craters were caused by meteoroids impacting on the moon's surface. Man-made craters were produced by firing tiny aluminum pellets into solid aluminum blocks at speeds exceeding 11,000 mph.

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Director Robert R. Gilruth
 Public Affairs Officer John A. Powers
 Chief, Internal Communications Ivan D. Ertel
 Editor Milton E. Reim

WELCOME ABOARD

Seventy-seven new employees joined the MSC staff during the month of July. Out of the number, 63 were assigned in Houston.

FLIGHT OPERATIONS DIVISION: John B. Miles, James F. Dalby, Sheryl K. Babineaux, John P. Heerey, Larry W. Keyser, Stanley P. Mann, Sandra V. McChargue, Patsy D. Saur, David K. Banner, Bartus H. Batson, Jimmy W. McCommis and Georgia A. Wanzung.

SYSTEMS EVALUATION & DEVELOPMENT DIVISION: Robert E. Hanson, James L. Townsend, Franklin U. Williams, Arthur W. Johnson, Charles W. Morris, Henry A. Rotter, Jr., Kenneth N. Hopkins, Linus P. Murray and Arthur R. Amuedo, Jr.

COMPUTATION AND DATA REDUCTION: Robert P. Crabtree, Ronald C. Sobolik, Norman S. Morris, Claude A. Kirkpatrick and Richard W. Krause.

MSC ATLANTIC MISSILE RANGE OPERATIONS (Cape Canaveral): Roland E. Morris, Billy G. McWhorter, William W. Perkins and Daniel D. Couchlin.

FACILITIES DIVISION: James W. Allison, Wiley W. Murrell, Jr. and Sylvia F. Holdeman.

CREW SYSTEMS DIVISION: Jay B. Laskin, Richard S. Serpas and Michael L. Kuropatkin.

INSTRUMENTATION & ELECTRONIC SYSTEMS DIVISION: Jan W. Martin and Edgar A. Van Lowe.

OFFICE SERVICES DIVISION: Felix A. Ward, Nellie B. Pomeroy and M. Joan McBrayer.

FINANCIAL MANAGEMENT DIVISION: Thomas L. Johnston, Sandra L. Julian, Elliott Manferd and Elton A. Wilborn.

WHITE SANDS MISSILE RANGE OPERATIONS: Ovid O. Olsen, Lloyd A. Eller, Herman H. Lauterbach, Frederick E. Drogemuehler, Carol E. Irby,

MSC PERSONALITY

Stoney Named Chief, Spacecraft Technology

William E. Stoney, Jr., a 37-year-old aeronautical engineer, has been appointed Chief of the Spacecraft Technology Division of Manned Spacecraft Center's Office of Engineering and Development. He assumed the post vacated by Charles W. Mathews, who is now Acting Manager of the Gemini Spacecraft Project Office.

Stoney, who has an eminent background in the engineering field, was previously assigned as chief of advanced vehicle conceptual studies in the office of Advanced Research and Technology at NASA's Washington, D. C. headquarters.

In August 1949, Stoney joined the staff of NASA Langley Research Center (then part of the National Advisory Committee for Aeronautics) as an aeronautical engineer in the Applied Materials and Physics Division. Nine years later he was appointed head of the Heat Transfer Section and in 1960 took over the helm of Langley's Scout Project Group.

Born in Terre Haute, Ind., Stoney attended Polytechnic Preparatory School in Brooklyn, N. Y., and earned a bachelor of science degree in aeronautical engineering from Massachusetts Institute of Technology. In 1951 he received a Master's degree from the University of Virginia.

Just prior to his appointment at NASA headquarters in Washington, D. C. he

Hewlett L. Weaver and George M. Ortiz.

PERSONNEL DIVISION: Daryle E. Roth and A. Suzanne Carpenter.

GROUND SYSTEMS PROJECT OFFICE: O. Gene Gabbard, Matthew J. Quinn, Jr., Harvey C. McClay, William E. Kuykendall, Jr. and George Stephenson.

FLIGHT CREW OPERATIONS: Dewey H. Mobley and George F. Prude, Jr.

SPACECRAFT TECHNOLOGY DIVISION: William E. Stoney, Jr.

GEMINI PROJECT OFFICE: Vicki J. Henry and Donna McMahan.

PROCUREMENT AND CONTRACTS DIVISION: Linda S. Stell, Tony C. Riggan, John A. Sewell, H. Lannell Hearrean and Charles Gordon.

SPACE ENVIRONMENT DIVISION: Madalyn Krevosky, Patty J. Wood and Anna Marle Thames.

APOLLO PROJECT OFFICE: Karla A. Rammaling and Joe McKenzie.

PUBLIC AFFAIRS OFFICE: Milton E. Reim.

MANAGEMENT ANALYSIS DIVISION: Stanley R. Spaeth.

SECURITY DIVISION: Everett D. Shafer.



WILLIAM E. STONEY, JR.

was awarded a Sloan Fellowship in executive development at MIT and spent one year there studying the fundamentals of management action.

A veteran of World War II, Stoney served as an enlisted man with the U. S. Air Corps from March 1943 to March 1946. His three years of military service included a tour of duty in the Marianna Islands.

The amiable engineer makes his home in Houston and in his spare time "enjoys a good game of tennis."

Agena

(Continued from page 8)

of solar radiation traveling 93 million miles to burn into the surfaces exposed to the sun; the paralyzing minus 455 degree cold of space; the heat radiation from the earth that raises temperatures on that side of the vehicle to a mere zero degrees; and finally, the heat generated by the operation of the electrical systems within the satellite; all combine to present the engineers and designers with mixed problems.

To define and develop solutions to these many problems, the Lockheed Missiles & Space Company has established one of the world's most completely equipped Thermal Radiation laboratories. Dr. Gaumer, senior member of the laboratory, eliminated the apparent answer of equipping Agena with an air conditioning system.

"Such an approach is out of the question," he said. "Every cubic inch of space and every ounce of weight holds specially designed instruments for the mission."

Walker Sets X-15 Altitude Mark

Joseph A. Walker, chief research pilot of the Flight Research Center, reached the record altitude of 350,000 feet (66.3 miles) on a flight in the X-15 research airplane July 19.

Flying X-15 no. 3, Walker topped all previous altitude marks for manned winged aircraft following launch from the B-52 at 45,000 feet over Smith Ranch Lake, Nevada. Highest previous altitude of 314,750 feet was flown by Major Robert M. White, former Air Force project pilot, on July 17, 1962.

Walker reached a maximum speed of 3,866 mph (mach 5.09) on the flight which was launched at 10:20 a. m., PDT. He landed on Rogers Dry Lake, at Edwards 11 minutes later.

Walker, a 42 year-old civilian and veteran pilot of many NASA research airplanes, set the record by running the X-15's rocket engine for 85 seconds at full thrust and reaching an altitude of 175,000 feet at burnout. The X-15 engine has 57,000 pounds of thrust.

NASA engineers and flight operations officials expressed satisfaction with the flight.

The X-15 was originally built, under joint sponsorship of the Air Force, Navy and NASA, to obtain research data at speeds up to 4,000 mph and altitudes to a maximum of 250,000 feet. The flight was the 90th made in the three X-15 airplanes since the program began June 8, 1959.

Project Mercury Party Is Held

A Project Mercury party was held July 27 at the Galveston Bay Manor of Paul Barkley. The Manor is a former governor's mansion.

The party, sponsored by the Project Office, was in reality for the entire Mercury team and a crowd of more than 450 showed up for the gay festivities. The affair offered an opportunity for a number of groups to get together in a relaxed atmosphere.

The program, emceed by John Powers, featured Bill Dana and a skit directed by Dave Goldenbaum.

The skit was in reality a press interview with Ed Hamblett portraying newscaster Walter Crankcase and Leroy Proctor assuming the role of Astronette Geraldine Klotchimer, pilot of the Grudge 7 spacecraft.

Music for the party was furnished by the "D Wayne K" band, and special favors for the event were available for all in the form of charms, perfume and Mercury emblems.

The party was catered by the Rice Hotel.

Special guests present included a number of contractor personnel and Houston civic leaders.



HIGHLIGHTS OF THE Project Mercury party included a skit with Leroy Proctor at left portraying the part of an astronette and Ed Hamblett serving as Walter Crankcase during an interview. At the right, Bill Dana, known in entertainment circles as Jose Jimenez the eighth astronaut is pictured during his routine.