

# Space News **ROUNDUP!**

VOL. 1, NO. 19

MANNED SPACECRAFT CENTER, HOUSTON, TEXAS

JULY 11, 1962

## Schirra To Pilot Six-Orbit Mission In September

### Telstar Launch May Change Our Communications Set-up

As the Roundup goes to press, NASA in cooperation with the American Telephone and Telegraph Company is scheduled to launch a 170-pound Telstar experimental communication satellite from Cape Canaveral sometime this week. The launch was to have been no earlier than yesterday.

If successful, the Telstar experiment could change the entire international communications picture. Five years from now you may be able to pick up a telephone and "dial a star" to talk to London, Paris or the Far East. You could also spend an evening watching transatlantic television from Europe.

The first satellite built by a private company which also is paying for the cost of the launch, Telstar is scheduled to circle the earth each two hours and forty minutes. Beginning about 15 hours after launch, on the sixth through the ninth orbits, a series of tests are planned using Andover, Me. and Holmdel, N. J. stations.

They include a live telephone call between people at two different locations, through the satellite; a video tape transmission, a facsimile transmission of a current news picture; and the sending of high-speed data between two points.

Signals will be sent from the giant horn antenna at Andover up to Telstar. The satellite will receive the signals, amplify

them ten million times and transmit them back to earth, where the larger Andover antenna is expected to receive the signals at far greater strength than the one at Holmdel.

A transatlantic demonstration, produced by the U.S. television networks, is planned after the domestic demonstrations and overseas technical tests have been successfully conducted. This overseas program will not occur until the satellite has been in orbit for about a week.

Representatives of the three U.S. networks and the European Broadcasting Union (EBU), which includes 16 countries, announced last month that the U.S. program will be a "reflection of what's going on in America that day. We want to use this medium eventually to communicate ideas and news. We're going to many countries in many tongues."

Said the EBU representative, "The European telecast aims

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Astronaut  
Walter M. Schirra, Jr.



Astronaut  
L. Gordon Cooper, Jr.

### Gordon Cooper Is Back-up Pilot For MA-8 Flight

The next United States manned orbital flight, scheduled for late September, will be planned "for as many as six orbits" with Astronaut Walter M. Schirra as pilot and Astronaut L. Gordon Cooper as back-up, it was announced June 27.

Commented Schirra, "I am very, very thrilled and looking forward to doing a job which is important for all of us."

The decision as to the specific mission—that is, how many orbits will actually be made—will depend on many technical factors which will be evaluated constantly up to the time of flight and during the first turns around the earth.

If the mission goes to six orbits, it would involve a nine-hour flight, compared with the four and one-half hours the two three-orbit missions to date have taken.

In addition, a flight of five or six orbits would mean landing about 300 miles northeast of Midway Island in the Pacific Ocean, the first time a U. S. spacecraft has landed in the Pacific rather than the Atlantic.

A four-orbit mission would bring the craft down about 200 miles east of Midway.

Landing points for one, two or three orbits would remain the same as in earlier Mercury-Atlas missions, off the southeastern coast of the United States.

Schirra, 39, a Navy commander, is an Annapolis graduate, married and has two children. He is a native of New Jersey.

Schirra flew 90 combat missions in a F84E jet in Korea, shooting down one enemy MIG. For Korean service he earned the Distinguished Flying Cross and two Air Medals.

After Korea he was a Navy carrier flight instructor and as a test pilot helped develop a whole family of super-fast jets including the Cutlass, Fury, Demon and Phantom. He has 3,200 hours of flying time, 2,000 of them in jets.

Married to the former Jo Fraser of Seattle, Wash., he has

### Gilruth Cites MSC Progress Despite Difficult Relocation

"We are well ahead of a schedule set last fall, which we thought then was an optimistic one," Dr. Robert R. Gilruth told the employees of Manned Spacecraft Center and their guests last Wednesday at the July 4 celebration welcoming MSC to Houston.

Commenting on progress made so far, he noted that the mission of the Manned Spacecraft Center was threefold: to manage the spacecraft development for this nation's manned space flight effort, to conduct the flight missions, and to develop here in Texas

the free world's largest and most advanced research and development center devoted to manned space flight.

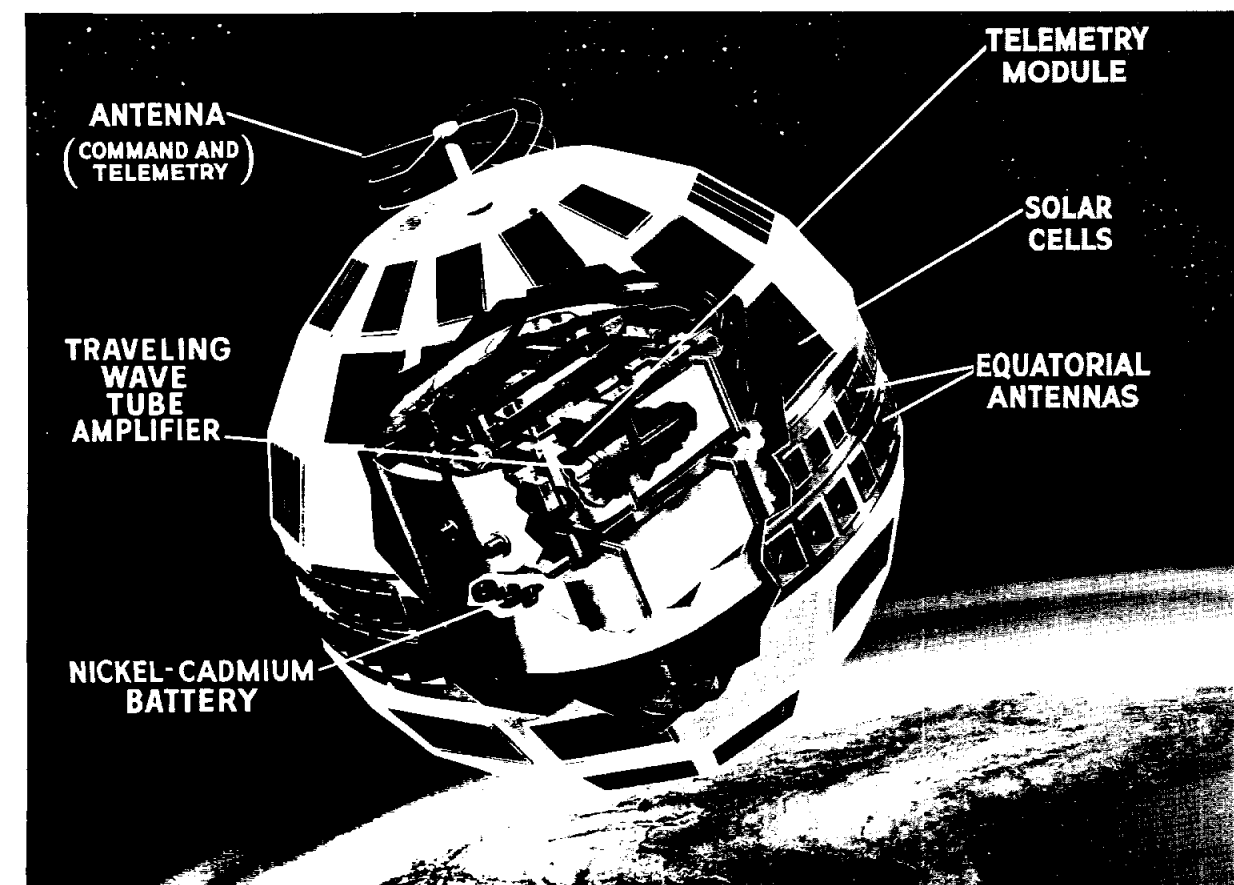
"In working on this mission during the past few months the Manned Spacecraft Center has doubled in size; accomplished a major relocation of facilities and personnel; pushed ahead in two new major programs; and accomplished Project Mercury's design goal of manned orbital flights twice with highly gratifying results."

Of the relocation and growth, Gilruth said, "Since September, 1961, when Houston was selected as our permanent site, we have acquired and moved into office, shop and laboratory space in 12 interim sites in Houston and out at Ellington Air Force Base. Our people are hard at work in these places conducting tests, making design studies, administering contracts, and working at the hundreds of other jobs required to operate a program like ours. We have moved a total of 751 employees and their families to Houston and hired another 689 people, essentially doubling our staff.

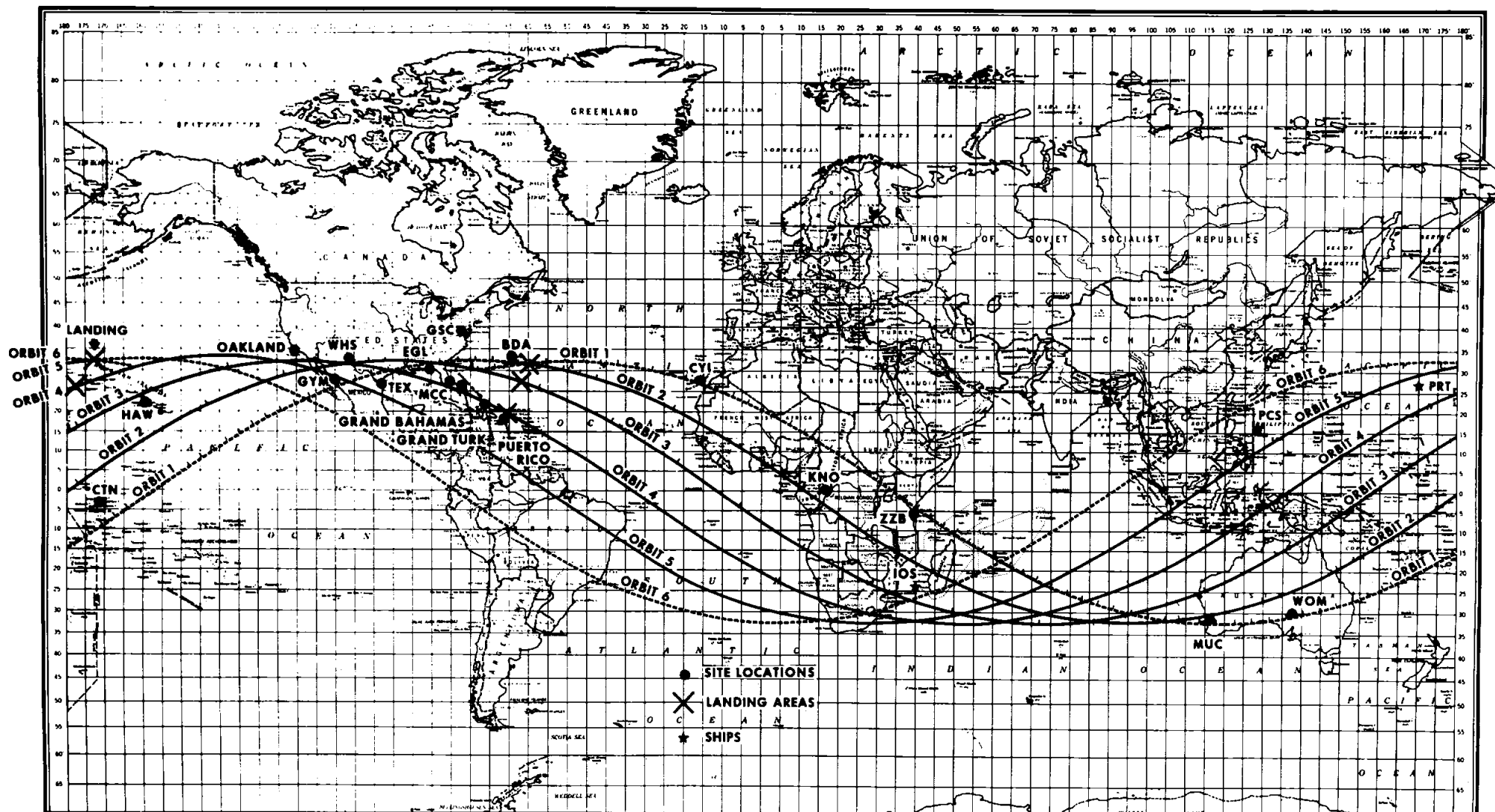
"As for program activities, during this major relocation effort we kept Project Mercury moving ahead full speed. We accomplished three major launches—the orbital flight of

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A CUT-AWAY DRAWING of the Bell System's experimental Telstar satellite, which is to be launched this week, weather permitting. (See additional pictures on page 3.)



GROUND TRACK AND PRIMARY LANDING AREAS FOR 3-PLUS ORBIT MISSION

## Gilruth Cites MSC Progress

(Continued from Page 1)

Enos, the chimpanzee; the free world's first manned orbital flight by John Glenn on February 20; and Scott Carpenter's three-orbit flight on May 24. Each of these operations was a major effort involving a world-wide deployment of flight-control, tracking, and recovery forces totaling about twenty thousand people.

"In this same time period, these people gathered here, at Manned Spacecraft Center, have conceived and begun implementation of two major new space programs, Projects Gemini and Apollo."

As an idea of the effort involved in Gemini, Gilruth said, "We are spending about 600 thousand dollars each working day on essentially a nationwide basis.

"With respect to our job of creating a research and development facility here, work has been underway on our new complex at Clear Lake for several months. The total progress has been such that we are well ahead of a schedule set last fall which we thought then was an optimistic one. The first building is now scheduled for completion next August and we should be moving personnel and equipment into the new site during the fall and winter of 1963-64.

"The Mission Control Center here in Houston will involve a major complex of electronic computing and communications gear to tie together a world-wide network of tracking stations operated by NASA and the Department of Defense. All of this equipment will be in operation well in advance of the actual flights in

order that we can practice with it . . ."

"So much for the big picture of our recent accomplishments and future plans. I would like to speak directly for just a moment to our families gathered here. I realize there have been some undue burdens caused by your having to make this move while your husbands were still involved in the heavy travel schedule that our work requires. I want to commend every one of you for the unselfish way in which you have faced these difficult days."

MSC Associate Director Walter C. Williams, in a speech following Gilruth's, commented:

"In the history of the Mercury program, there were 16 spacecraft flights leading up to the first manned sub-orbital flight of Alan Shepard. Following that achievement, there were four additional flights prior to the orbital flight of John Glenn.

"Most people remember only the four manned flights and perhaps those of the chimpanzee. They sometimes tend to forget the many other flights which, although not as spectacular, do, however, represent major engineering and operational milestones.

"The Gemini and Apollo flight programs will undoubtedly follow the same pattern. There will be many difficult and important flights which may not appear to the general public as major accomplishments.

"Everyone must bear with us through an extensive series of "look alike" flights with a lack of identifiable milestones before Americans will land on the moon.

## Six Orbit Mission 'Big Move' Is Over At Last

(Continued from Page 1)

two children.

Cooper, an Air Force major is 35, a native of Shawnee, Oklahoma, married to the former Trudy Olson of Seattle, Wash. His home town is Carbondale, Colo. where he and his mother own a small ranch.

Astronaut and Mrs. Cooper have two daughters, Camala K. and Janita L.

Three years at the University of Hawaii in Honolulu ended when he received a commission in the Army, later transferring his commission to the Air Force. Recalled for extended active duty in the Air Force in 1949, he flew F-84's and F-86's for four years and while in Munich, attended the European Extension of the University of Maryland Night School for one year. He attended the Air Force Institute of Technology at Wright-Patterson AFB, Ohio for two years, receiving a bachelor's degree in aeronautical engineering in 1956.

Assigned to the Air Force Experimental Flight Test School at Edwards AFB, Cal. he graduated in 1957 and was assigned to the Performance Engineering Branch of the Flight Test Division at Edwards where he participated in the flight testing of experimental fighter aircraft, working as an aeronautical engineer and test pilot.

Cooper has 2,600 hours of flying time, 1,600 in jet fighters. His hobbies are photography, woodworking, hunting, fishing and boating.

## Credit Union Still Needs Depositors

(Continued from Page 8)

major portion of the Center by Army Corps of Engineers, under the supervision of Col. R. P. West, Fort Worth District Engineer.

Currently leased, temporary facilities in Houston consist of 11 sites, totaling 528,888 square feet of floor space, not including in this total that of the Clear Lake site.

Concerning the permanent facilities at Clear Lake, the following are some of the first

## Telstar

(Continued from Page 1)

to show the wonder and diversity of our continent to American and Canadian viewers."

Television networks plan to transmit 12 minutes of current news pictures from a number of geographical locations in the U.S. This segment will also be shown to U.S. viewers as part of a longer program, from 30 minutes to an hour.

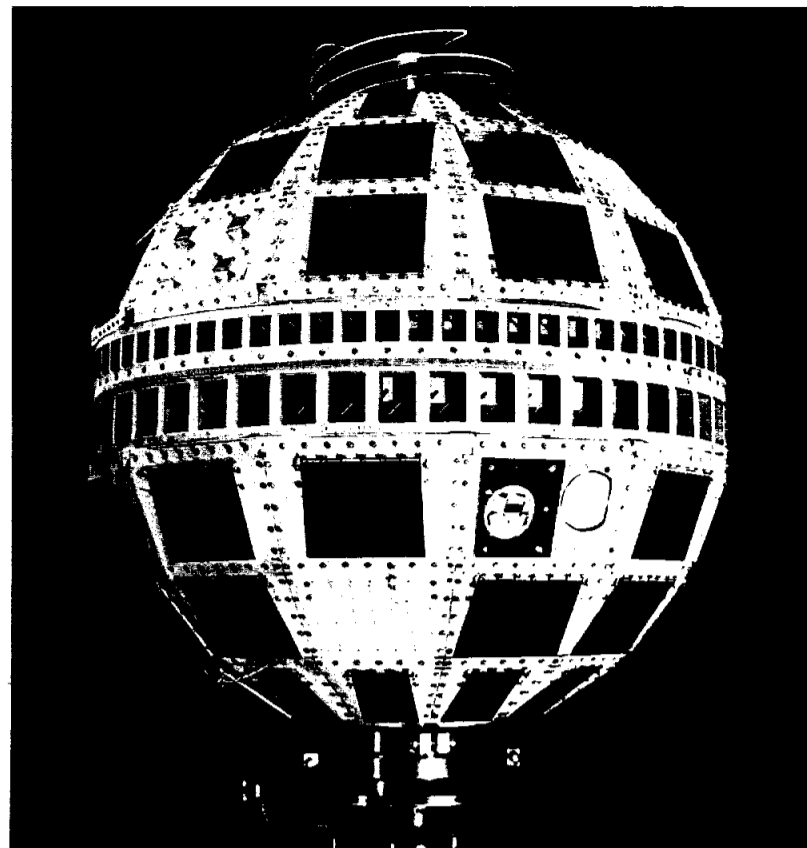
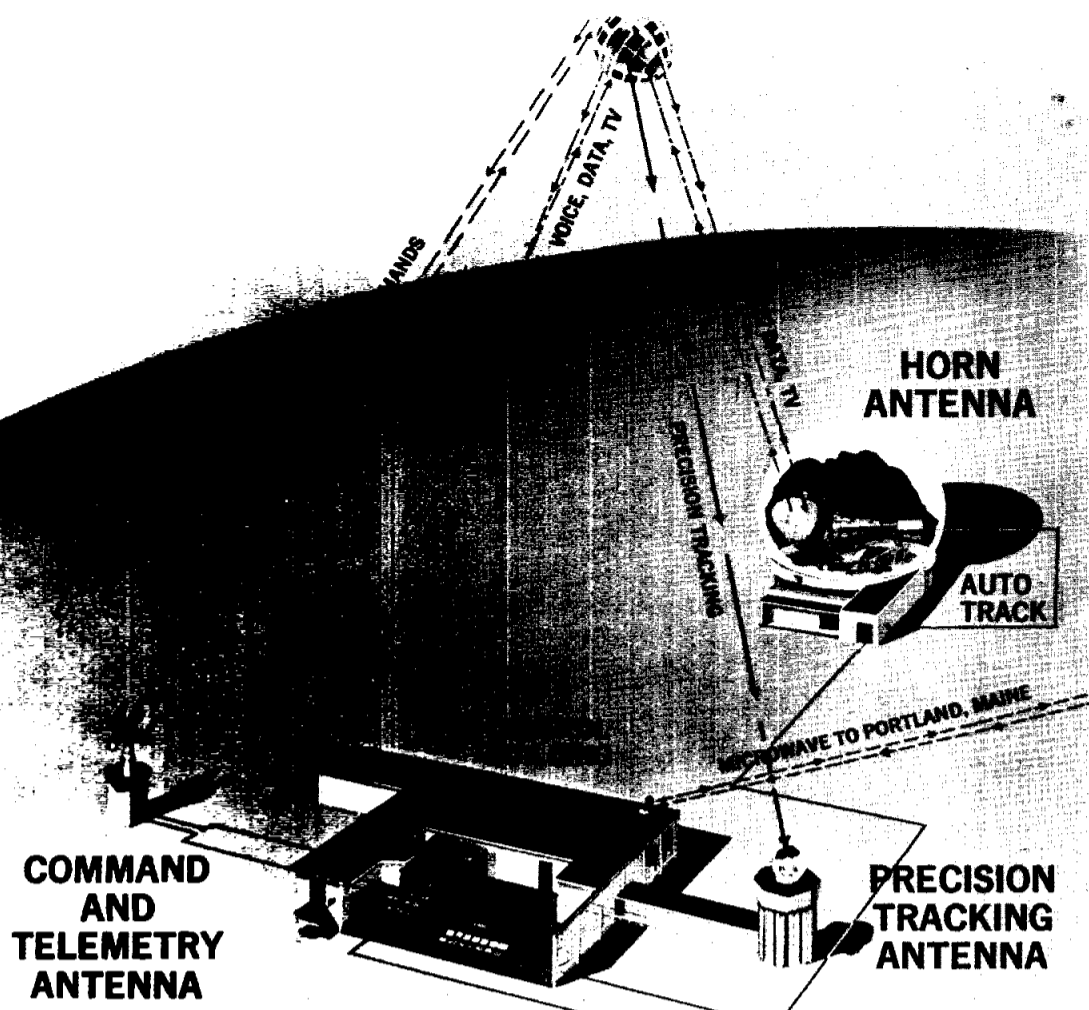
Other international demonstrations from the U.S. will include telephone conversations and photo and data transmissions. The voice demonstration will include a hook-up between people in 20 cities in the U.S. and 20 cities in Europe. Ten such conversations can be carried out simultaneously.

More than \$30 million have already been spent on the communications sphere, and scientists see it eventually as a satellite network that will relay telephone conversations or television without interruption.

On June 30, the number of MSC Credit Union members reached 190, with a total of \$15,951.68 deposited. The Credit Union has made 42 loans totaling \$16,380 and is overdrawn \$58.41. Shares buyers and new members are badly needed.

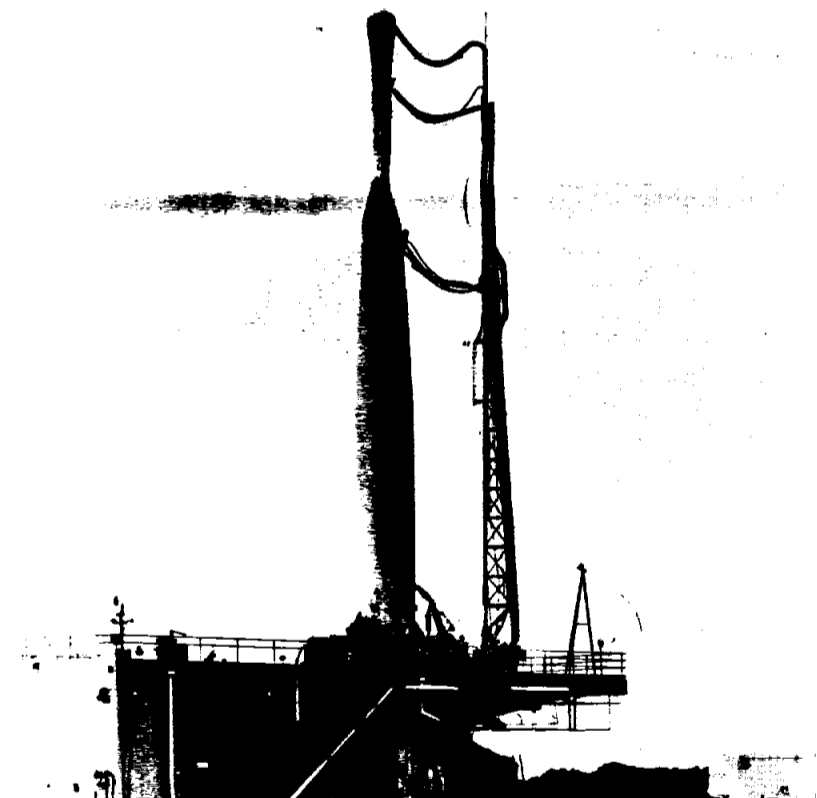
Currently there are \$6,470 in approved loans, and no money with which to make them. Members and loan applications are invited. Loans are issued on a priority basis as money becomes available, governed by the size of the loan requested and the urgency of the need.

The Credit Union is in the process of setting up representatives in each building to take memberships, and has such a representative in CEIR Building, Rich Building and at Ellington AFB. Volunteers for the other buildings are requested. Names and telephone numbers for each representative will be published in the Roundup as soon as the system is completed.

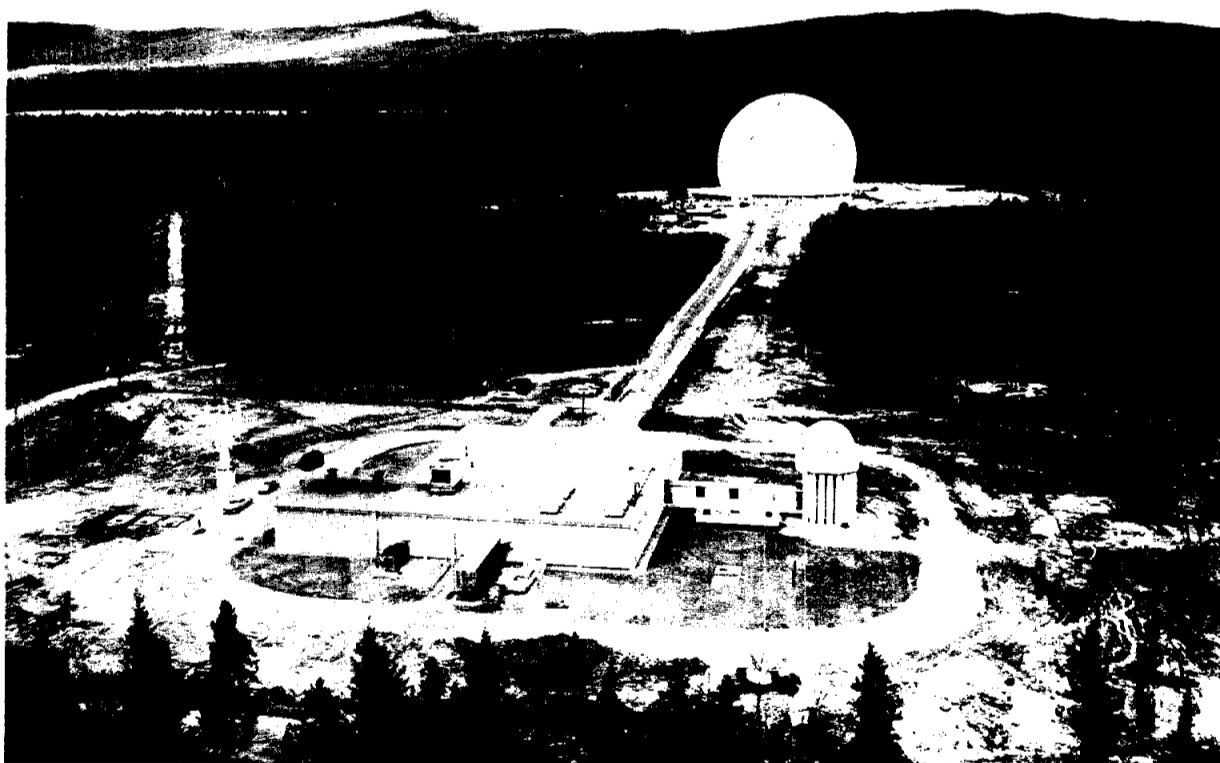


A CLOSE-UP of the Bell System's Telstar satellite, which will serve as a microwave relay in space to transmit tests of telephone conversations, data and television programs across oceans. The satellite is covered by 3600 solar cells which obtain energy from the sun for power. At the top a helical antenna transmits a beacon signal for tracking by ground stations and transmits information about the condition of the satellite. Girdling the center of the satellite are two broadband antennas, the upper receiving at 6390 megacycles, the lower one used for transmitting at 4170 megacycles.

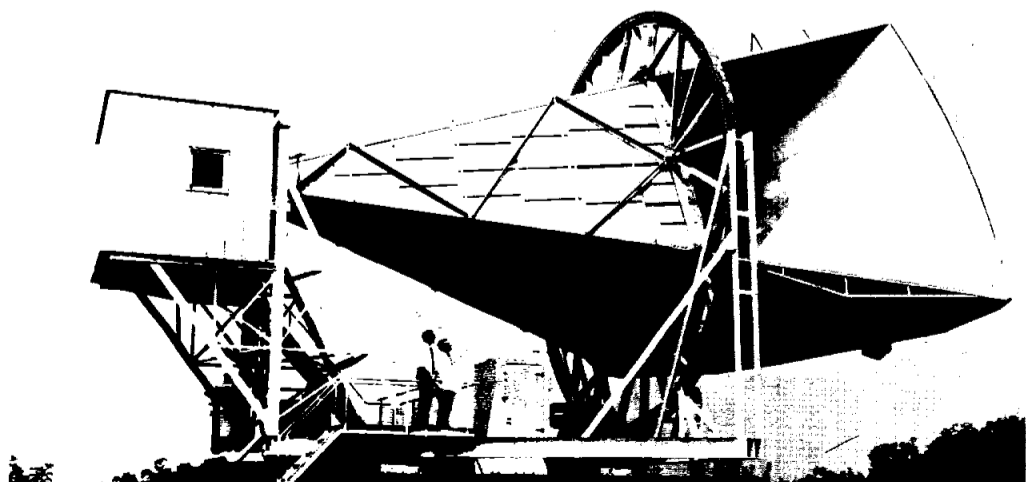
AN ARTIST'S DRAWING of the Bell System's earth station near Andover, Me. shows some of its functional uses with the Telstar communications satellite. The station will handle a variety of electronic signals, and, just as the commercial broadcast FM stations differ from AM stations, the transmitters and receivers of the station vary from each other in a variety of ways.



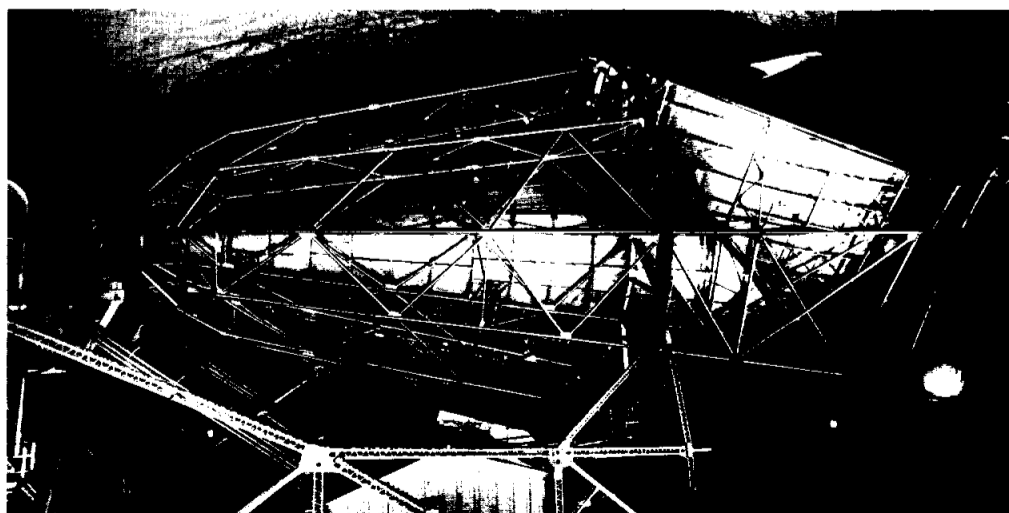
A DELTA LAUNCH VEHICLE was used to boost the Telstar into orbit from the launch pad at Cape Canaveral. Under a cooperative agreement, NASA launched the satellite and will be reimbursed by American Telephone and Telegraph for costs of the Delta and launch services.



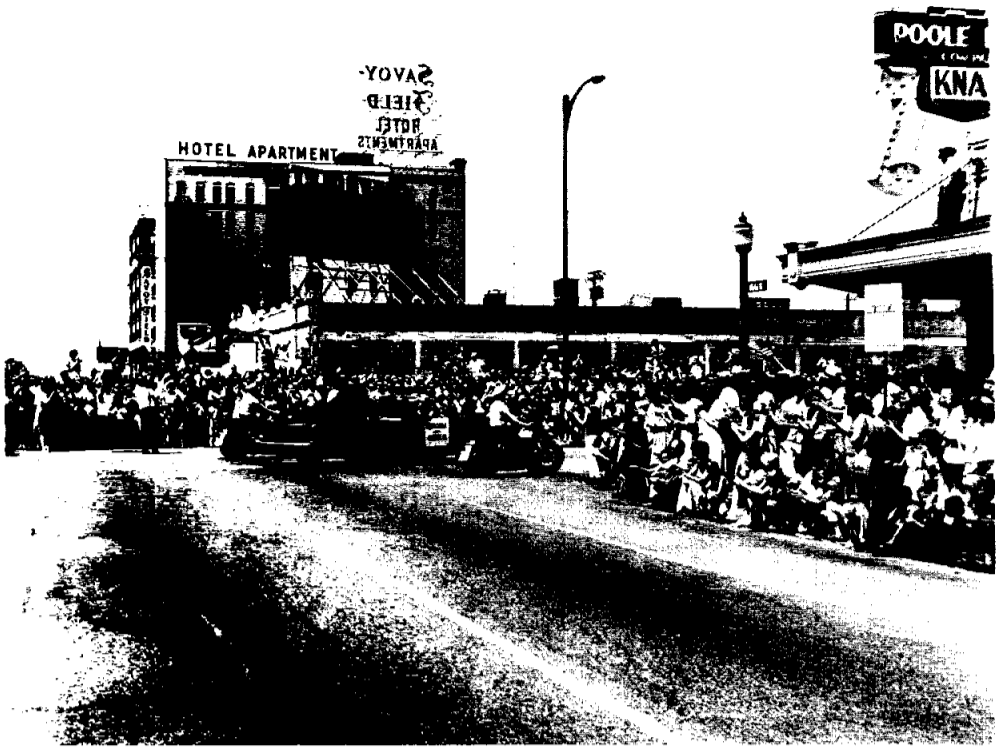
AN AERIAL VIEW of the satellite communications earth station near Andover, Me. The control building in the foreground houses control, computing and tracking equipment to operate the horn antenna, which is covered by the huge dome in the background, a quarter of a mile away. At left a helical antenna receives telemetry, sends commands up to and tracks the Telstar. At right, a smaller dome covers a precision tracking antenna.



HORN ANTENNA at Bell Telephone Laboratories, Holmdel, N. J. was originally built for the NASA Echo I experiment, and has been modified to work with the Telstar communications satellite frequencies. The Holmdell antenna tracks Telstar and receives broadband signals from it. Its transmission capabilities are not used.



HUGE ANTENNA weighing 380 tons began simulated tests at the Andover location in April. Engineers use the horn to carry out experiments in broadband communications by way of Telstar. The horns transmits to and receives signals from the satellite, a "space radio relay tower."



**HOUSTONIANS CLAP, CHEER, and wave Fourth of July flags near the corner of Main and Bell Streets in downtown Houston, part of the thousands that lined the route to welcome Manned Spacecraft Center personnel to the city.**



**PERCHED ON THE BACK of a convertible, Astronaut Wally Schirra grins at his new neighbors all by himself. Schirra, who flew to Houston from Cape Canaveral where he is preparing for the next manned space flight, was the only astronaut unaccompanied by his family.**



**THE REVIEWING STAND along Main Street afforded mayors from cities in the Houston area and county officials a ringside view of the motorcade. In the foreground is Astronaut Virgil I. Grissom, Mrs. Grissom and their son, Mark.**



**LOOKING ALMOST as thick as the crowd outside, MSC employees gathered in the Sam Houston Coliseum shortly before noon to hear speeches of welcome from city officials.**

## Houston Turns Out In Force To Welcome MSC

Officials of the Manned Spacecraft Center were accorded one of the warmest welcomes in MSC history last Wednesday morning when they, along with distinguished guests and the Project Mercury astronauts, toured the downtown streets of Houston in a July 4 motorcade sponsored by the Houston Chamber of Commerce.

Waves of hand-stinging applause rolled over the 36 open convertibles as Houstonians turned out to give their new neighbors an official "Howdy."

Crowds lined up as many as six and eight deep along some parts of Main Street. At other places the crowd was thinner, but continuous applause followed each car as it moved along the route. Cheers broke out at times, as watchers craned from windows, the balcony of the Rice Hotel and even from

atop temporary sidewalk construction shelters.

The activities of Houston TV cameramen, set up at vantage points along the route, were rivaled by amateur shutterbugs who climbed poles and marquees to get pictures. One man strove to operate a home movie camera while a small child perched on his shoulders and clutched his head for support.

Back at the Sam Houston Coliseum, parade participants joined the other MSC employees for a Texas-style barbecue, preceded by words of welcome from Houston officials.

Bands from Houston high schools played "The Eyes of Texas," and "Dixie" as the group mounted the platform, and then the National Anthem, followed by the invocation given by the Rev. J. T. Bagby.

"We are deeply proud of the fact that the Manned Spacecraft Center has moved to our area, and that we who live here will have an opportunity

to work, play and worship with you," Chamber of Commerce president George T. Morse, Jr. told the group.

"You have the most challenging assignment ever assigned to anyone. We here join the nation in our prayers for your continuing success."

Morse introduced Senator John Tower of Wichita Falls, "I am not a typical Texan," Tower quipped. "I am precisely one foot below the legal size. I sometimes think they sent me to Washington because they were ashamed of the tourists to see me.

"We rejoice in your presence here; we like you and hope you'll like us."

Congressman Albert Thomas and Congressman Bob Casey added their comments to the welcome. Said Casey, "I was present at the farewell ceremonies in Virginia. There were some tears shed over the parting. I told them (MSC officials) they could expect a warm hospitality here. I think

you will find that Houston will endeavor to replace some of the friends you have lost."

Judge Bill Elliott and Houston Mayor Louis Cutrer added their greetings. "This certainly was the most meaningful and important Fourth of July Parade we have had in a long time," Cutrer said.

Public Affairs Officer John A. Powers then introduced MSC Director Robert R. Gilruth, Associate Director Walter Williams, the seven astronauts, and their families.

"Since you are now Texans, the only requirement is that you look like a Texan, act like a Texan and talk like a Texan," Morse told the group. In order to create the "look of Texans" he awarded Gilruth, Williams, Powers and each of the seven astronauts a Texas-style hat.

Replied Astronaut John Glenn, "We now look the part, we will try to act the part, and — Howdy."

Harris County Sheriff Buster Kern followed the hats up with

deputy sheriff badges initiating the 10 into the Reserve Deputy Sheriff's Posse.

Mayor Cutrer presented a key to the city to each of the group and a certificate of honorary Houston citizenship.

Thanking Houston for the welcome, Dr. Gilruth said, "I in behalf of all of us, say that we are proud to be Americans, we are proud to be here in Texas and we are proud to be your neighbors." (See further comments in story on page 1.)

Following the welcome addresses, MSC employees lined up to get barbecued chicken, pork and beef, with all the trimmings, then returned to watch the special entertainment arranged by the Chamber of Commerce.

Included in the show were Gene Barry, star of TV's "Bat Masterson" series, Sally Rand, in Houston for the performance of "Gypsy," and Marietta Marich of the popular local TV show, "Midnight with Marietta."



SEATED ON THE PLATFORM as MSC Director Robert R. Gilruth addresses the crowd are (l to r) Mrs. Gilruth, Congressman Bob Casey, Public Affairs Officer John A. Powers, Senator John Tower, the Rev. J. T. Bagby, Chamber of Commerce President George Morse, Houston Mayor Louis Cutrer, and Judge Bill Elliott.



FOUR-YEAR-OLD Sherisse Boynton, daughter of John T. Boynton of Mercury Project Office, leaves the speech-making to others as she devotes solemn attention to a piece of barbecued chicken.



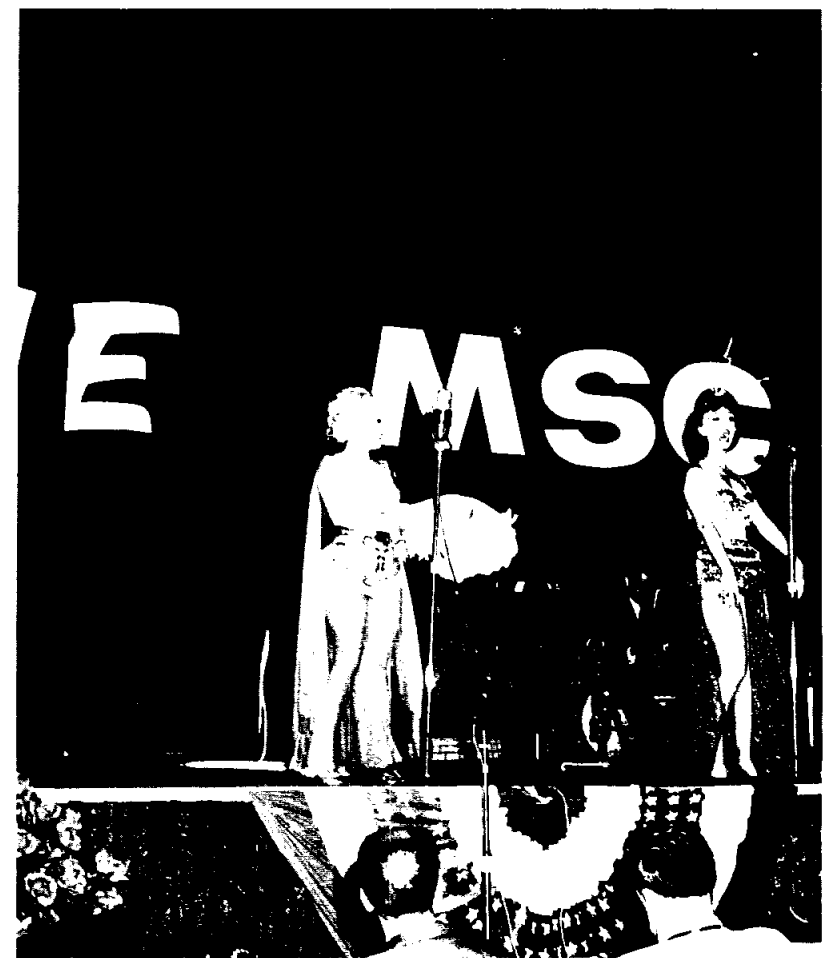
DOING THE TWIST with TV star Gene (Bat Masterson) Barry is Young Vicki Mercer, daughter of Houston Jaycee President Gordon Mercer.



MUGGING THE TRADITIONAL cowboy, Astronaut Scott Carpenter (far left) hooks thumbs in belt. Others presented with stockmen's hats (in order to "look like Texans") were Astronauts Cooper, Glenn, Grissom, Schirra, Shepard and Slayton, PAO Officer John Powers, MSC Associate Director Walter C. Williams and Director Robert Gilruth.



A PORTION of the chow line at the barbecue was made up of the Texas Department of Public Safety troopers who acted as drivers for some of the cars in the long motorcade.



SALLY RAND, in town for her starring role in "Gypsy" was a surprise entertainer during the show following the barbecue.

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 . . John A. Powers**  
**Editor . . . . . Ivan D. Ertel**  
**Staff Writer . . . . . Anne T. Corey**

## On The Lighter Side

The spirit of adventure has definitely not died in American youth, according to NASA Administrator James E. Webb.

"One of my favorite communications," said Webb, "came from a young man named Tom Wicklein, who lives in Elgin, Ill. Tom wrote that he and his friend Matt Fisher wanted to be part of the crew that is going to land on the moon in 1971, at which time both boys would be 18 years old."

"We will take any training there is to be done," Tom wrote. "Must we prove we have guts? We just did today."

"Matt and I did something brave. I laid down at the bottom of a hill and my best friend Matt rode over me. I think that took a lot of courage on Matt's part but he thought the opposit (sic)."

Consternation in Webb's office as to just what Tom had been run over with was eased when an Associated Press reporter discovered it was a sled. "We were all relieved," said Webb, "to learn that he hadn't used a Mack truck."

Another stirring example of American spirit came from Sister Mary Ellen, a teacher at Melrose Academy near Philadelphia. Her fifth grade class had been discussing myths, and she challenged each of the pupils to compose a myth of his own.

One of them, written by a pupil named Paul Pettinato, she sent to her local newspaper with these comments:

"The enclosed is the work of a little boy who departed somewhat from the typical style of a myth to produce an example of the pioneer spirit in the heart of a ten-year-old American child."

This is what Paul Pettinato wrote:

### "A Myth"

"About five years ago, Premier Khrushchev sent two men to the moon. He gave them a sign to put there so the rest of the world would know that Russia was there first. When the two Russians landed on the moon they spoke to Khrushchev by radio. He asked them what they saw on the moon. They said they saw nothing but white mountains and a little sign."

"They said it read, 'two million miles to Cape Canaveral.'"

## Collins Radio To Supply Voice System For Gemini Spacecraft

The voice communication system for the Gemini two-man spacecraft to be used for extended orbital space missions and rendezvous experiments will be supplied by Collins Radio Company.

The contract, awarded by McDonnell Aircraft Corporation, the prime contractor for the spacecraft, to Collins calls for the delivery of at least 20 voice communication systems for the Gemini spacecraft.

Collins' role in Gemini will consist of providing the following: UHF voice transmitter and receiver, the primary voice communication system; HF voice transmitter and receiver, the secondary voice communication system; and voice control center, which includes

UHF and HF selector switches for the voice communication system and an intercom system for use by the two astronauts.

The equipment to be supplied by Collins for Gemini is basically similar to that designed and built for Project Mercury. The UHF and HF transceivers are about 15 percent larger and weigh about 10 percent more than the comparable Mercury radios.

## EDITORIAL EXCERPTS

Newport News  
Daily Press  
June 14, 1962

### FUTURE SETTLERS IN SPACE TO USE 'INSTANT' HOMES

Tomorrow's space settlers won't worry about building shelters. They'll carry "instant" homes and furniture in deflated form in a hip pocket package or small cannister.

The "space emigrants" will have only to inflate their "canned" space huts, wait for the sun's rays to warm the material and presto! A shelter, a chair, or you name it.

Roy W. Wendahl, executive vice president of the Hughes Aircraft Co., explains the new "foaming" process. He says it was developed as a plastic under an Air Force contract.

"The foaming process," says Wendahl, "resembles the bubbly sudsing of a detergent dumped into a washing machine, if you know what I mean."

"But unlike the suds, the plastic is activated by the infrared rays of the sun, and it forms a tough rigid material which also is a good insulator against the extremes of heat and cold in space."

In a demonstration Hughes scientists foamed a man-size igloo shelter and an arm chair.

For this experiment, the material was fashioned into discs. Some were cemented to a seven-foot balloon and some to a crude wire chair frame. Then they were placed in a vacuum chamber and heated with infrared lamps to make them foam to a thickness of several inches.

"Our researchers now are looking at methods of coating cloth and rubber with the material so that inflatable articles could be carried in a small cannister by a space traveler," Wendahl said. "When a shelter or other structure is needed, the space man could take it out of the cannister, inflate it, and expose it to the sun's rays."

The Ryan Aeronautical Co. of San Diego uses energy from the sun, too.

It captures solar rays to provide electrical power for research into a major space project—Mariner.

Thousands of tiny solar cells will be mounted on aluminum panels to convert radiant energy for the scientific tasks of Mariner. It's a spacecraft scheduled for two flights to the vicinity of Venus this summer.

Ryan is producing the solar panels for the National Aeronautical and Space Administration's jet propulsion laboratory, at the California Institute of Technology.

The rectangular panels, 29 inches wide and 60 inches long, will give mariner a wing-like appearance.

## MSC PERSONALITY

### Dr. Charles A. Berry Is Named Aerospace Medical Office Head

Dr. Charles A. Berry, a lieutenant colonel in the Air Force, has been appointed as chief of the Aerospace Medical Operations Office under the assistant director of operations, MSC, effective July 2.

Dr. Berry previously served in the aerospace medical division, Office of the Air Force, Surgeon General, in Washington. He was awarded the certificate of achievement for his outstanding qualifications in the specialty of aviation medicine.

He is an aerospace medical specialist and has been associated with Project Mercury as an aeromedical monitor since the inception of the program.

A native of Rogers, Ark., he graduated from Coachella Valley Union High School in 1941 and received his BA Degree in 1945 from the University of California at Berkeley.

Dr. Berry received his medical degree in 1947 from the University of California Medical School in San Francisco, and followed his internship with three years of general practice in Indio and Coachella.

Entering the Air Force in 1951, he served first at Hamilton AFB, Cal. and then entered the aviation medicine residency training program. Between 1952 and '55 he served as base flight surgeon and deputy command surgeon in the Caribbean Air Command, Albrook AFB, Canal Zone.

In 1955, Dr. Berry completed the final year of his residency training program at Harvard School of Public Health and received his Master of Public Health degree cum laude.

In July 1956, Dr. Berry was assigned as Assistant Chief of the Department of Aviation Medicine at the School of Aviation Medicine at Randolph AFB, Tex. and in July 1958 became chief of the Department of Flight Medicine. He served on temporary duty in Hollywood, Calif. as technical advisor for "Men Into Space" during the summer of 1959. In September of that year, he reported for duty in the Aerospace Medicine Division, Office of the Surgeon General, USAF. In December he was selected as an aeromedical monitor for the Manned Spacecraft Center's Project Mercury operations. Since that time, he has served as prime monitor at the Canary Island and Bermuda sites and has trained other medical monitors at these sites. He was qualified as a "Space Surgeon" on June 17, 1960.

## Welcome Aboard

Eighty-two new employees joined the staff of Manned Spacecraft Center in Houston between June 10 and 22. The two listed for Preflight Operations will be stationed in Cape Canaveral, the remainder in Houston.

**Apollo Project Office:** Henry R. Van Goey, Robert L. Dotts, Aubrey L. Bray.

**Preflight Operations:** Kenneth J. Branch, James A. Thomas.

**Flight Operations:** Richard D. Nelson, Paul T. Chaput, Mary Kelly, Bobby E. Eddy, Harold E. Tepoel, Ronald L. Berry, and Betty S. Burge.

**Flight Crew Operations:** Edward M. McElwee, and James A. Miller.

**Systems Evaluation and Development:** Eugene Dameron, Charles W. Wight, Cletis R. Booher, Clarence J. Wesselski, William G. Davis, Lou D. Allen, John E. Whalen, William K. Myers, and Betty C. Smith.

**Life Systems:** Brenda S. Manuel, Dowsie W. Morris, Jr., Wayne L. Milan, Paul E. Goldenbaum, Harry Reischer, John N. Chatfield, Christopher G. Cherniak, James H. O'Kane, Thomas R. Turner, Kirby R. Simmons, Joseph C. Doyle, Otto E. Crenwelge, Jr., Robert L. Gafe, Ralph J. Marak, and William L. Hogan.

**Spacecraft Research:** William A. Rochelle, Josephine A. Grant, Brenda J. Bonura, Ernest H. Day, Karin S. Hummell, John F. Berglund, James C. Jones, Paul O. Romere,

William L. Richards, and Laverne E. Pedersen.

**Data Computation and Reduction:** Pete Medina, George B. Roush, Kathryn A. Gray, and Raymond H. Schulz.

**Steno Services:** Sheila K. Ash, Lana Lang, Virginia Smedberg, and Sara A. Burgin.

**Procurement:** Marie D. Foehner, Cooper S. Atamanchuk, Melody J. Mechler, and Sandra C. Mouser.

**Personnel:** Kent A. Kwiatkowski.

**Public Affairs Office:** Carolyn L. Long.

**Facilities:** David M. McStravick, Richard D. Andrews, and Ronald Briggs.

**Administrative Services:** Hedy G. Mannheimer, Michael H. Crites, Jane S. Simpson, Carol A. Petrich, and Virginia A. Phillips.

**Logistics:** Charles D. Deem.

**Mercury Project Office:** Carol L. Johnson.

**Technical Information:** Helen N. Foley, Julia A. Andrews, Phillip W. Kokesh, Kenneth M. Ayers, and Mary A. Burck.

**Space Physics:** Jerry W. Reedy, Lloyd A. Armstrong, Robert I. Jones, and Alva C. Hardy.

**Security:** Theresa P. Myles.

## Scott Aviation Is Selected For Apollo Regulator Device

Scott Aviation Corporation, Lancaster, New York, has announced that it has been selected to participate in Project Apollo.

Howard Benzel, senior vice president, said Scott's initial Apollo contract is for compact, lightweight regulators which will control flow and pressure of oxygen and hydrogen to a fuel cell being developed by Pratt Whitney Aircraft Division United Corporation.

Benzel noted that Scott earlier was selected to design and supply regulators controlling helium pressures in the reactant control system of the Project Mercury space probe which put the first American astronaut into orbit.

In commenting on the Apollo contract and in Scott's role in the space program, Benzel declared "Scott was selected from a field of highly capable manufacturers of controls and regulators as a result of specific

demonstrated capabilities. Reliability factors for these sophisticated space programs are high. Therefore, extensive testing of the developed regulator will precede the production of hardware to be used in the spacecraft. The highly concerted effort of Scott research and development, supported by other specialized personnel in the field of airborne pneumatic controls, has been programmed for this requirement.

The fuel cell, being developed by Pratt and Whitney Aircraft, will furnish power to supply electrical energy needed to operate the three-man spacecraft electrical systems.

Charles D. Cupp, engineering manager, will head the enlarged unit. Cupp has been with Scott since 1948, serving as Chief Development Engineer since January, 1961.

## Grissom Gets Sertoma Award In Kansas City Celebration

Astronaut Virgil I. "Gus" Grissom received the applause and warm greetings of Kansas City June 28 when he accepted the annual award from the golden anniversary convention of Sertoma International.

He accepted the wood and bronze plaque from former President Harry S. Truman just before a motorcade through downtown streets, in which he rode with Sertoma International officials.

Grissom also accepted similar plaques for each of the other astronauts.

The plaque carries the inscription, "In appreciation of service to mankind in pioneering in the exploration of outer

space, this testimonial is presented to Virgil I. Grissom." Nearly 500 persons gathered around the convertible in which Grissom was to ride at the head of the parade. They broke into applause as Grissom got into the car with Kansas City Mayor H. Roe Bartle.

Before the procession, Grissom had told more than 1,000 members of Sertoma International that the United States is making strides toward sending a spacecraft toward the moon.

Truman pointed out that America was grateful for the part the astronauts have played in making scientific advances for the United States.



Group Captain J. R. R. Jenkins

## British Medical Officer Visits Life Systems Division

Group Captain John R. R. Jenkins, medical liaison officer, Royal Air Force Staff, British Embassy in Washington spent a day reviewing the facilities and personnel of Life Systems Division here last week.

The Royal Air Force cooperates with the United States Air Force and Navy in exchanging information on aviation medicine through a member of the RAF medical staff stationed in Washington.

"Since space is an integral part of aviation medicine, we maintain liaison with NASA also, for which we are extremely grateful," commented Jenkins. "The physiological problems man will increasingly encounter as he penetrates further and further into space are of extreme interest. We are grateful to Dr. White (Dr. Stanley C. White, chief of Life Systems Division) and his staff for their cooperation."

Jenkins noted that he was pleased as well to visit Texas again, calling it his "second or third home." He was stationed at Randolph Field in 1952 and '53.

He looked over the physiology and biology facilities of Life Systems Tuesday morning of last week and spent the afternoon with astronaut equipment and "hardware."

"The British are leaders in the field of high altitude protective equipment and escape systems from high-speed aircraft," commented Dr. White later. "That is a very productive group over there. We are working with their high altitude suit, developed at Farnborough."

Jenkins returned the compliment when he said, "I don't think you Americans realize how full we are of admiration for your space effort and for the work done by doctors who support these missions. When an American space flight is going on, work literally stops in Britain for the duration of the flight."



DR. JAMES P. HENRY finished up a farewell luncheon in his honor at the Holiday Inn Thursday with a cake-cutting in Life Systems Division. Dr. Henry, head of the Biomedical Branch, was instrumental in the development of the bio-instrumentation and the blood pressure measuring device used in project Mercury, and in the animal program which preceded manned space flight. He left MSC last week to return to duty with the Air Force, in which he is a lieutenant colonel. He had been with STG-MSC three years.

## Space Technology Good For More Than Trips To Moon

Lessons learned from space technology research are helping medical specialists in Cleveland, Ohio, develop a mechanical heart for mankind.

Long-range objective of the physician-technician team at the famed Cleveland Clinic Foundation is a mechanical heart which is to be a complete and reliable substitute for the real article—one which will be sewn into the human chest cavity as an actual replacement.

Today they are well on their way, thanks to the skills of scientists and engineers at the National Aeronautics and Space Administration's Lewis Research Center in Cleveland.

NASA was invited to participate in the mechanical heart program in November of 1960 when Dr. Willem J. Kolff of the Foundation was looking for a more efficient pump for his mechanical heart. He came to Lewis and talked to controls engineer Kirby W. Hiller and pump engineer Cavour H. Hauser, both assigned to the nation's space program.

The answer was an air-driven heart that can be programmed exactly like the numerous scientific devices used by NASA.

Thus far the group has experimented solely with dogs and has been successful in keeping them alive for more than 24 hours. This summer they will begin similar experiments using calves.

Dr. Kolff and his heart research team first approached scientists at the Lewis Research Center in late 1960 after many attempts at developing pumps to drive the substitute heart. At that time they were using electrically-driven pumps which were bulky and rejected great quantities of heat. The longest survival of an animal outfitted with a mechanical heart was about 12 hours.

Scientists at Lewis recom-

mended a system involving a pneumatically-driven heart based on similar successful applications in aircraft. Following additional consultations at Lewis a new control system for the pump was designed by Hiller using mostly existing electrical parts at the NASA laboratory.

"The cooperation between NASA and the Cleveland Clinic in the mechanical heart program is an excellent example of how space technology is contributing to related scientific fields" Dr. Abe Silverstein, Director of the Lewis Research Center stated.

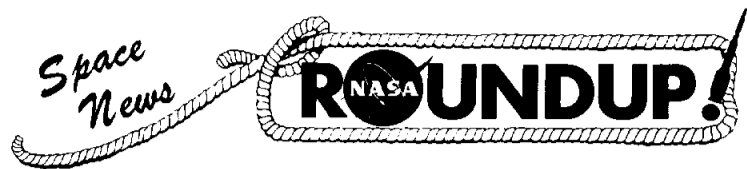
## Lingle Is Named Special Assistant

The appointment of Walter L. Lingle, Jr., as Special Assistant to the Administrator was announced by Administrator James E. Webb. For a temporary period he will also serve as NASA Deputy Assistant Administrator for Public Affairs.

Lingle, formerly executive Vice President of Procter and Gamble, Cincinnati, Ohio, has served since last March as Deputy Administrator of the Agency for International Development. A native of Atlanta, Georgia, he is 54 years old, married, and has three children. He is a graduate of Davidson College, Davidson, North Carolina.



THIS BRONZE and wood plaque was presented to Astronaut Virgil I. Grissom June 28 by Sertoma International, meeting at a golden anniversary convention in Kansas City.



SECOND FRONT PAGE

## 'Big Move' Completed; We're All Texans Now

The Manned Spacecraft Center has completed its 1400-mile cross-country relocation, the "big move" which began late in 1961.

A total of 751 employees and their families—about 3,000 persons in all—were transferred from Langley Air Force Base, Hampton, Va. to temporary facilities in Houston, Texas, pending completion of the multi-million dollar permanent facility at Clear Lake.

Manned Spacecraft Center employees have been hired from all over the United States. Engineers and scientists of the necessary caliber are hired when and where found. Many clerical and maintenance personnel, however, have been hired locally.

The present employee roster of some 1,700 has already doubled in size from the original figure. By July 1 of next year, the Center will have a total of 2,700 on its rolls. About 250 of the present employees are stationed at Cape Canaveral, Fla. with the rest in Houston.

Concerning total payroll of the Center's employees, the average pay—according to the latest count—is around \$7,000 per annum. Multiplication of this average by some 2,700 employees will give a fair idea of the total payroll by July 1, 1963.

First facilities at Clear Lake should be completed for initial

occupancy by about January, 1964. More complex facilities will require additional time. At present, \$90 million is in the NASA budget for Houston construction. About one-third of this is tagged for buildings and laboratories and the remainder for major research facilities.

Having been responsible for Project Mercury since its inception, MSC is also engaged in Projects Gemini and Apollo, and has the responsibility for developing manned spacecraft, training of space flight crews and for conducting space flight missions.

The permanent Clear Lake facility will be constructed on 1,600 acres of land obtained from Rice University on the southeastern side of Houston. A \$1,499,280 contract was awarded December 11, 1961 to the Houston firm of Brown and Root, Inc., for the architect-engineer design work of a

(Continued on Page 2)

## Marshall Looks To Methods Of 'Keeping Up' Moon Base

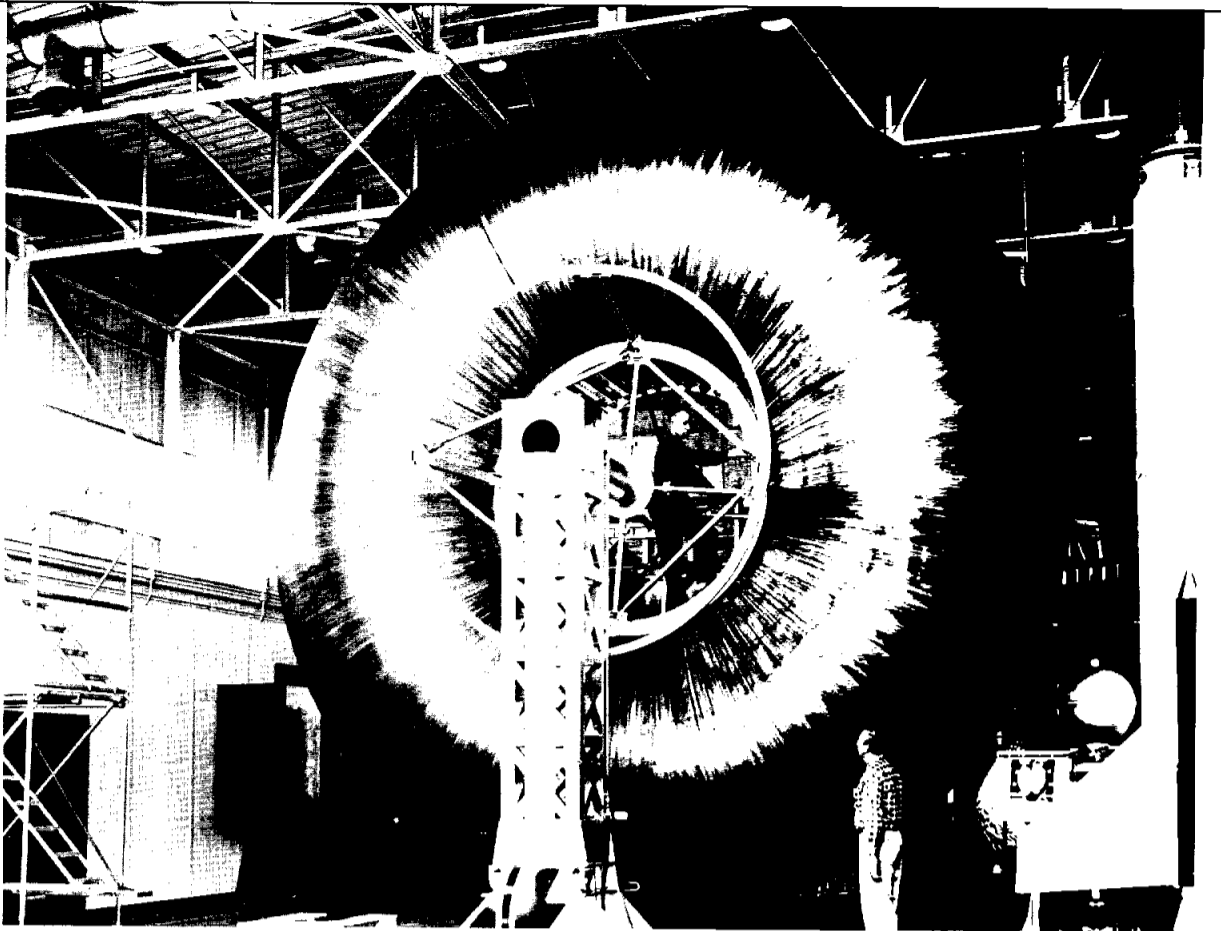
The NASA Marshall Space Flight Center, Huntsville, Ala. has signed contracts totaling \$293,493 with two firms to make comparative studies of advanced lunar transportation systems. The contracts went to Ling-Temco-Vought, Inc., Dallas, Tex., \$148,897, and Lockheed Missiles and Space Co., Sunnyvale, Calif., \$144,596.

Object of the six-month, parallel investigations is to compare rocket systems and techniques most desirable for the establishment and supply of a permanent lunar base. This is a study of a possible future project—a logical follow-on to the current Apollo program—and is not an established NASA program. Trajectory, performance analysis, design criteria and other information will be developed for two approaches, both based on the Saturn C-5 rocket.

In one, an expendable nuclear rocket of the RIFT type would be used to boost a payload of personnel and/or cargo to a lunar orbit. From this orbit the payload would be soft-landed on the moon with the fourth stage, which would have the capability of launch-

ing a manned payload from moon to earth when required.

The second approach would use an orbit-launched nuclear vehicle and orbital operations. The nuclear stage (RIFT or a more advanced type) would be a reusable ferry vehicle which is placed into earth orbit and fueled by earth launch vehicles of the chemical type. The ferry vehicle would take men and cargo to a lunar orbit where it would rendezvous with a reusable chemical lunar landing and launch stage, or lunar shuttle. The lunar shuttle then would transport the payload to the moon's surface and the ferry would return to earth orbit for reuse. In some cases the ferry's return would provide transportation for lunar base crewmen being rotated.



A GIANT DOUGHNUT in shape, this 24-foot model of a possible manned inflatable space station for research purposes was developed by scientists at Langley Research Center, Va. A slow rotation of the station would establish it in orbit and keep the astronauts' feet on the floor by providing artificial gravity. Such space stations could be used as research laboratories, communication centers or manned weather stations.

## Space Effort Needs The Support Of Women, Children Says Webb

"One of the difficulties which we experience in outlining out objectives in space is that of achieving an appropriate understanding of the basic scientific knowledge which space exploration will yield. Many citizens who have had no training and no particular interest in science find it difficult to associate fundamental knowledge with the practical applications which flow from it," NASA Administrator James E. Webb told the General Federation of Women's Clubs meeting in Washington, D. C. last month.

Webb quoted an incident related by Astronaut John Glenn, speaking before Congress. Glenn told of Disraeli, the 19th century prime minister of England, who once visited the laboratory of the scientist Faraday, who was conducting early experiments with electricity. "But what possible use is it?" Disraeli asked. And Faraday replied, "What use is a baby?"

"We know now the value of electricity," commented Webb.

Reviewing the NASA program and its plans for the future Webb also mentioned the role of industry in scientific and technological pioneering, which he called "a major characteristic of the age in which we live."

He dwelt at length on the interest of the nation's children and their identification with the space effort, relating this to the country's serious need for trained engineers.

"I am hopeful that this will encourage more young people to enter scientific and engi-

neering fields," he said.

Of women's role in the space effort, Webb said that the fact that NASA has no plans to train female astronauts does not mean that women have no place in the program. Requirements for Project Mercury pilots include the most extensive obtainable experience as jet aircraft test and research pilots, including, in addition to extensive education, training and experience in one or more scientific or engineering fields. "Under conditions as they exist in aviation at the present time, these qualifications are more readily met by men than by women. In fact they are most apt to be met by men trained in the military services where the extensive flight experience can be obtained.

"However, many women are already employed by NASA in numerous non-flight capacities. Not only are about one fourth of NASA employees women, but in many instances they occupy scientific and technical positions of importance."

He mentioned Dr. Nancy Roman, chief of astronomy in the NASA Office of Space Sciences, who has responsibility for such projects as the orbiting solar observatory which was successfully flown, and the orbiting astronomical observatory now under development. He then described a typical week in her office.

He also mentioned Eleanor C. Pressly, a section head at the Goddard Space Flight Center and one of NASA's leading experts on sounding rockets; Harriet Malitson, a solar physicist at Goddard;

Marjorie Townsend, an electronics engineer at the same center; Ann Bailey, one of NASA's younger scientists; and Marcia Neugebauer, coordinating scientist.

"We have at NASA a total of 146 women who are classified as professional Aero-Space Technologists and another 77 women who are professional mathematicians.

"One of the answers to the shortage of engineers which we face may well be to get more talented young women to enter this field. Twenty-six percent of the engineers in Russia, I am told, are women. In this country, only about one percent are women."

## IBM To Develop Guidance Computer

When the Gemini spacecraft starts its first orbit around the earth, IBM equipment will be aboard, performing a number of vital tasks.

McDonnell Aircraft Corp., has selected IBM to develop an advanced electronic guidance computer to help steer the spacecraft into orbital rendezvous with another space vehicle.

The computer will make more than 7,000 calculations per second, operate on low power and weigh a little more than fifty pounds.

In addition to the computer, IBM's Space Guidance Center at Owego, New York will design and develop a unit that will enable the Gemini astronauts to enter information manually into the system during the flight.