Good Works Instead of Cards

On Page 7

Space News ROUNDUP!

Achievement 1965

On Pages 4-5

VOL. 5, NO. 6 MANNED SPACECRAFT CENTER, HOUSTON, TEXAS JANUARY 7, 1966

MEDAL ROW—NASA Administrator James Webb presides at ceremonies December 30 in the MSC Auditorium in which NASA Distinguished Service and Exceptional Service Medals were presented to the Gemini VII and VI flight crews, to members of management and to the launch control team. Seated, left to right, are Donald "Deke" Slayton, Gemini VI crewmen Wally Schirra and Tom Stafford, and Gemini VII crewmen Frank Borman and Jim Lovell.

Service Medals Awarded Crews, Managers, Launch Operations Team

Recognition in the form of NASA Distinguished Service Medals and Exceptional Service Medals was given 12 persons December 30 whose efforts contributed to the outstanding success of Gemini space flight missions during 1965. NASA Administrator James E. Webb made the presentations.

Gemini VII crewmen Frank Borman and Jim Lovell and Gemini VI crewmen Wally Schirra and Tom Stafford each received the NASA Exceptional Service Medals in recognition of their 14 day duration space flight and the world's first space rendezvous. Schirra received a Distinguished Service Medal "for courage and judgement in the face of personal danger . . . calm and immediate perception of the totality of the situation . . . accurate and critical decisions making possible successful execution of the Gemini VI mission" following the engine shutdown during the second launch attempt December 12 and subsequent successful launch three days later on December 15.

The NASA Distinguished Service Medal was also presented to Donald "Deke" Slay-

(Continued on page 3)

'OUR FLIGHT' IN BROADEST SENSE—

Gemini VII Crew Credits Flight Success To Support

The term "our flight" was expanded by Gemini VII Command Pilot Frank Borman to take in all the ground support, Department of Defense and industry people who contributed to the success of the Gemini VII flight during the December 30 Gemini VII/VI press conference.

Said Borman, "Let me say that I am glad that the theme has been on the group and the team emphasis on this mission because I think it has been evident to Jim and I from the very beginning that we have had wonderful support from every quarter.

"Of course, one of the dangers when you start to outline the people that have given you this wonderful support is the fact that you often forget or overlook someone and many people use this as a reason for their not thanking everyone—I think what I would like to say is that when we use the term 'our flight' that we would like to use 'our' in the broadest sense and we would like to have everyone who was out on the oilers for two weeks in the Pacific or down to the people that are working the midnight shift in Martin and McDonnell realize that we are speaking for them when we say our.

"I also would like to acknowledge a particular group of people, our fellow astronauts, because we have gotten a tremendous amount of support and effort from them and I think any of the twenty some odd that there are now could have occupied any of these four seats and done as good or better job than the four of us did. We had the opportunity for which we are very grateful."

Borman and Pilot Jim Lovell continued their account of Gemini VII's 14 days in space.

Said Borman, "We arrived at the Cape on Nov. 8 with a little over three weeks to prepare and

(Continued on page 2)

'I GUESS WE'RE HERE'—

World's First Rendezvous Made To Sound Simple

Gemini VI crewmen Wally Schirra and Tom Stafford made the Gemini VII/VI rendezvous all seem quite easy as they described the mission to newsmen gathered in the Auditorium December 30 for the Gemini VII/VI post-flight press conference.

Schirra and Stafford passed the narrative back and forth between them in describing the liftoff, maneuver, rendezvous and reentry phases of the Gemini VI portion of the dual mission.

Alluding to the two previous launch attempts for Gemini VI, Schirra began the recount of the mission.

"We did finally have a liftoff, and I asked Frank Carey at the Cape to hold that tail plug until we got back. And again, I can only say exactly as Frank did on his spacecraft, that it was an ideally boosted flight. Typically, we trained to a situation that's more difficult than the actual flight and I didn't realize that we had even trained to observe the platform and the guidance needles respond as neatly as they did on this flight.

"On the second stage, when we staged we noticed a very large orange flame with a brownish-black edging to it that enveloped the spacecraft, and of course, we flew through this. This was the event of staging. This, we have concluded—and I think Tom should best describe it—is the source of the obscuration or smoky cloud. I'd rather not use the word 'smudge.' That's incorrect. It is a thin layer, a smoke residue layer, that appears on the windows."

Said Stafford, "I was sitting on the right side of the spacecraft and as we progressed into orbit, in this fashion, I would naturally see the horizon first. At approximately two minutes, I could see the Atlantic Ocean coming up and noticed how beautiful this string of cumulus clouds were going down the ocean on the Atlantic range, also how pure they were in whiteness. I just glanced out of the spacecraft for a second since I was monitoring the computer and attitude indications on my indicators.

"At the event of staging, this flash was really fantastic. It started from the back corner. It was a yellowish-orange phenomena, had progressed around to within 30 degrees of longitudinal axis. At the edge of it was a brownish-black smudge of all this described, and in just one second we flew right through the whole phenomena. Kinda blink your eyes . . .

"I went right back to watch guidance initiate, and then I came right back to the same set of cumulus clouds on the Atlantic Ocean. At that time, the clouds did not look nearly as pure and white as they did before, so we've two data points there—one prior to staging and one after staging.

"The covering on the window was somewhat of a homogenous mixture like it was practically baked on there and it definitely was thicker at the top than it was at the bottom, which you could expect. The spacecraft going into orbit this way, the top windows are nearer the outside of the envelope that would be formed with this fireball.

"I think from talking at the time, right after we got into orbit, and also discussing this with Jim and Frank, all four of us are of the opinion that the smoke that we have on the windscreens came from the staging event."

Schirra again picked up the narrative. "I think we can continue on into orbit from there. Continuing into orbit, the booster acted perfectly. We had SECO at about five plus thirty-eight to five plus thirty-nine. We performed our usual separation technique and immediately continued in the small end forward position.

"We didn't phase in to look at our booster; we were up there looking for VII, so we let it fall behind and charged on out after

(Continued on page 3)

WE WERE HEAD DOWN . . . Gemini VI crewmen Wally Schirra and Tom Stafford used small-scale Gemini models to demonstrate for newsmen how the final portion of the Gemini VII/VI rendezvous was carried out December 15. NASA Administrator James E. Webb sits at far left, and Gemini VII crewmen Frank Borman and Jim Lovell sit at right.

1965 Called 'Fabulous Year' For Gemini, Manned Flight

At a combined press conference December 30 for the Gemini VII and VI crews, Deputy MSC Director George Low made a nut-shell review of the nation's manned space flight achievements in 1965.

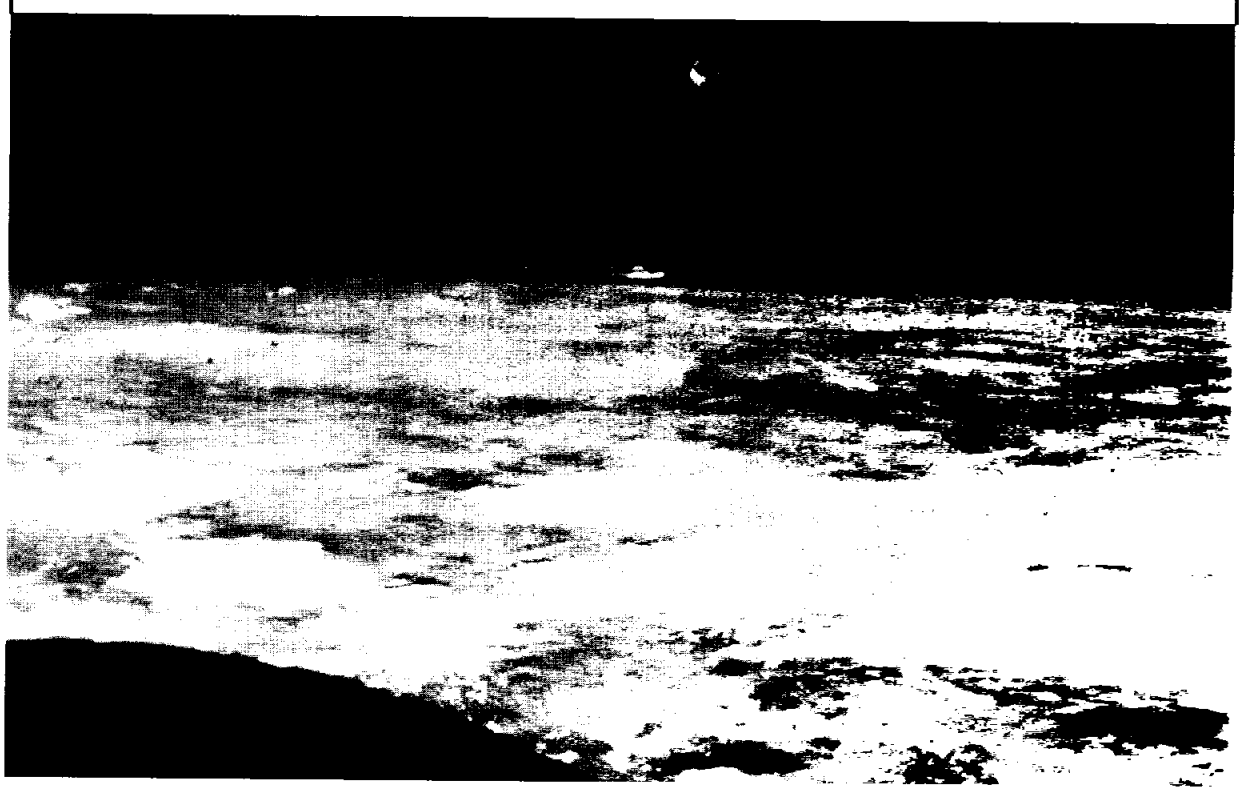
This has been a fabulous year for Gemini and the manned space flight program. If you will think back, just one year ago today, we had not yet launched Gemini II, which was the unmanned spacecraft qualification flight. One year ago, also, we made a commitment, to Administrator Webb and to Congress, to do our best to launch four Gemini missions in 1965. This commitment, of course, was met and exceeded.

"In 1965, six missions were flown, five of these were manned. In 1965, also, ten men orbited the earth for a total of 1300 hours and more than 22 million miles. And, if you will think of that number, 22 million miles, that is nearly 100 times the distance from here to the moon.

"And, in 1965, long duration flight was achieved in steps of four, eight, and fourteen days; also in 1965, self-propelled extravehicular maneuvers were conducted and precision spacecraft maneuvers culminating in rendezvous and controlled reentry achieved.

"And, finally in 1965, a host of scientific and technological and medical experiments was carried out in Gemini orbital flights. All of this adds up to a demonstration of the precision and the flexibility that spell out operational proficiency in manned space flight. Some of the members of the team that achieved this proficiency were honored in the awards ceremony. I would like to add my personal congratulations to them and to all others on the Gemini program."

Moonrise As Seen In Orbit



DECADE GOAL—The crew of Gemini VII shot this view of the rising full moon during the 14-day record duration space flight December 4-18, 1965. The rendezvous and recovery section of Spacecraft VII can be seen at the lower left portion of the photo which was made originally in color with a 2¼ x 2¼ inch format hand-held general purpose camera carried aboard Gemini flights.

Gemini VII Crew Credits Support

(Continued from page 1)

the preparation and launch was so nominal that it is hardly worth spending any time on. I will say that both Jim and I both felt that we could definitely notice ignition on the Titan.

"We felt liftoff and we had a wonderful ride on the vehicle. We were both impressed with the extreme accuracy of the guidance.

"After approximately 5 minutes and 37 seconds of powered flight, we experienced what we call SECO or the second stage cutoff and we then attempted to turn around and station keep with the second stage."

Lovell continued the narrative. "After station keeping, we did four adjust maneuvers with our thrusters. The first two were without the platform. One of the problems which we had was the lack of fuel and electrical power and we had to make it last for 14 days. So we were very stingy on all the electrical power and fuel that we did have aboard and we turned off the platform and computer just as soon as we were finished station keeping.

"We tried the technique of what we call burning on stars. The ground crew called up a star that we should aim the spacecraft at. We timed the burn and just kept the attitude looking at the star.

"Both of these burns worked out fairly decently and both Frank and I feel that now if we do lose platforms or computers, that we can make orbital adjust maneuvers by visual observation only. We made two more using the usual techniques of the platform and computer and everything worked just as we had planned.

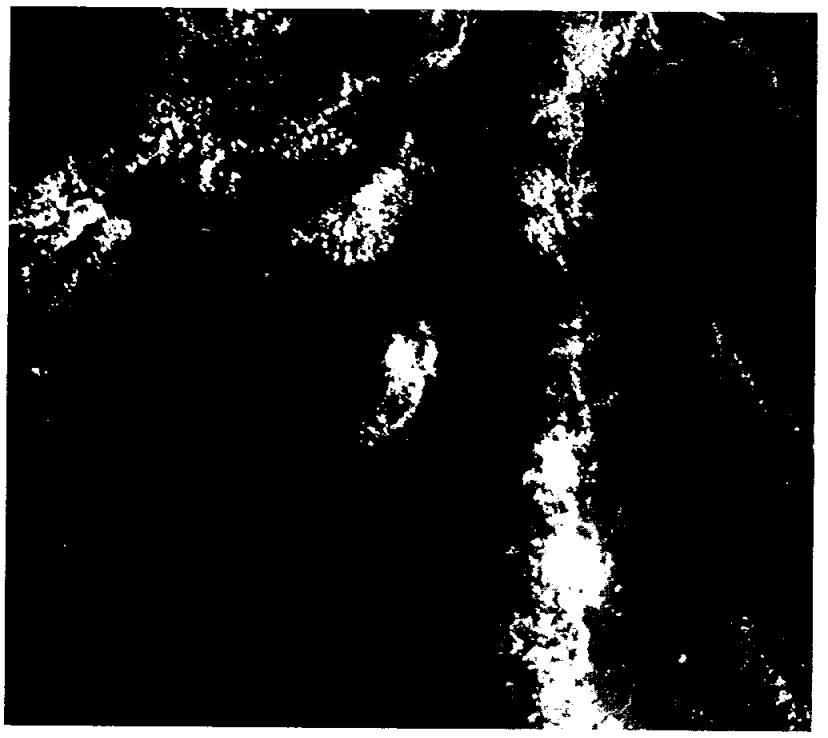
"About the second day, we tried something new. I took off my suit and I felt rather cold and sort of naked in there for a little bit thinking, most of time we had practiced with suits on and normally spacecraft and suits go together. But after about two hours of suitless operation, it became very comfortable. I looked over at Frank who was well suited up there, and I didn't want to tell him how nice it was because he looked so happy the way he was. This was one of the operational checks which we had tried to do.

"We felt that a long duration flight that suit operation, with the heavy suit around you might be a hindrance to your welfare and so we had attempted this, and I must say that the spacecraft performed very nicely. After a day or so, I didn't even look at the pressure gauge. It was very comfortable and very nice. As you know, towards the end of the mission, both of us became suitless and we feel now in long range missions that this will probably be the technique that people will use.

"One of those things we did that was rather new—since the mission was so long and past crews have stated that they became increasingly tired due to the fact that one person would be on watch and the other person would be sleeping and also communications between the ground and the spacecraft would keep the sleeping crew member awake."

"We decided to sleep simultaneously. Our watches were set on Houston time. And we had a regular work day, had three meals a day—breakfast, lunch and dinner—and then at night we went to bed. We put up pads or filters in the windows, and we didn't look out of course, and to us it was night time. We had absolutely no sensation of movement whatsoever.

"Our world was inside the spacecraft during our sleeping periods. We even took some books along. Frank had one that was appropriately called "Roughing It" by Mark Twain. And actually reading something that was entirely separated from space flight or spacecraft got our mind out of the spacecraft for that brief period of time."



STORIED ISLE—The Haitian end of the island of Hispaniola in the Caribbean was photographed by the Gemini VII crew as a part of the S-5 Synoptic Terrain Photography experiment. The top of the photo is due east.

Frank Borman described the Gemini VII reentry sequence.

"We had lost partial authority on our two yaw right thrusters but we found in aligning the platform for reentry, there was sufficient authority to prevent us to align the platform manually, which we did, we fired our retrorockets automatically, I shouldn't say we fired them they were fired automatically approximately over Canton Island and again we had communications with Houston remote through Canton and as usual throughout the 14-days our communications were superior.

"Elliot See came in and gave the countdown right on the money. And I must say that the retros were a little stronger than I had anticipated; I think the VI crew mentioned the same thing. After being desensitized to g's for 14 days, we really felt like we were going back, as John Glenn said to Hawaii; I thought I was going back to Japan or somewhere because they were very strong.

"We then started a nominal reentry. I discovered though since the retros were fired at night, we had very great difficulty in finding the horizon. And since we were anxious to enter the heat shield first, we looked around and I found I could see a little bit better by taking off my hood from this new lightweight suit.

"Jim was instrumental in developing the lightweight suit and although we were very anxious to get out of the suits entirely, I think the people who did this work did a superior job.

Borman continued, "I wish I could make it vivid and exciting because it really was. As the heatshield ablates and comes back, you get an impression you are in an inferno but the guidance was entirely nominal and the spacecraft and the systems worked exactly as advertised. We came down to 100,000 feet; we noticed the same sensations that had been debriefed many times by previous flight crews particularly we had, I think, the approximately the same reentry that Gemini IV had on the drogue. And we noticed the oscillations.

"I turned the RCS fuel back on to damp out the oscillations and we found out that after we had talked with Tom and Wally, they had had the same experience. So at 26,000 feet we opened the snorkel.

"At 10,000 feet we opened the main chute; it came out beautifully, the way we had seen in movies and the way the other people had described. Then we went to landing attitude and hit very close to the planned landing area.

"Both VI and VII hit within the accuracy of the reentry guidance. It was exactly the way we planned and I must say it was entirely nominal. We had performed the same thing at St. Louis and, of course, in our simulator many times.

"While we were still on the chute in the landing attitude, I saw the recovery aircraft circling and they called us—their call sign was Air Boss—and they were right there. As a matter of fact I don't believe we had been in the water more than 8 or 9 minutes and we saw a face in Jim's window and a Navy diver plugged in the interphone jack and said "Merry Christmas."

"We were then airlifted out to the *Wasp;* we landed aboard and I must say the Navy was just great. They couldn't have been nicer to us. Of course, everyone has been this way. It was obvious by the way they picked us up and the precision that they accomplished their mission that they were professionals."

25 Years Service by the Director

QUARTER CENTURY—MSC Director Dr. Robert R. Gilruth, right, receives his 25-year Service Award in mid-November ceremonies at the Office of Manned Space Flight, NASA Headquarters. OMSF Director Dr. George E. Mueller presented the award to Dr. Gilruth for a quarter century of aerospace research and management work with NASA and its predecessor, NACA. (National Advisory Committee for Aeronautics)

Service Medals

(Continued from page 1)

ton Assistant Director for Flight Crew Operations, for "outstanding performance in directing NASA flight crew operations . . . rapid adaptation of astronaut training activities to the experience gained from Mercury and Gemini . . . training of the ten Gemini astronauts who in 1965 flew more than 1250 hours in space."

Exceptional Service Medals were presented by Webb to William C. Schneider, Deputy Director Mission Operations, Office of Manned Space Flight, and John Mengel, Assistant Director, Goddard Tracking Network, for their contributions to the success of the Gemini missions.

The Gemini VII/VI NASA/Air Force/industry launch operations received the Group Achievement Award for successfully preparing and launching Gemini VI, making possible rendezvous with Gemini VII.

Accepting the Group Achievement Award were G. Merritt Preston, Deputy Director Launch Operations, Kennedy Space Center; Joseph M. Verlander, Director Gemini Program, Martin Company Canaveral Division; R. D. Hill, McDonnell Aircraft Corp. base manager; Lt. Col. John G. Albert, chief Gemini Launch Vehicle Division, Air Force Systems Command, and Lt. Col. Michael M. Kovach, chief Test Operations Division, Air Force Eastern Test Range.

Administrator Webb prefaced the awards ceremony by saying, "Although he (President Johnson) is not here today, I am happy to express his appreciation to this team. I am proud indeed to be the administrator of a program in which every President who has dealt with it has found an opportunity to work for peace . . . beginning with the first expression in 1959 of my predecessor, Dr. Keith Glennan, on the authorization of President Eisenhower, that we would fly the flights of the scientists of other nations where their scientific equipment would yield results that would be made available to the world.

Not Pledge But Member

AEROSPACE FRAT MEMBER—Christopher C. Kraft, Assistant Director for Flight Operations, right, receives a plaque of membership in the Virginia Polytechnic Institute Chapter of Sigma Gamma Tau aerospace engineering honorary fraternity from VPI Aerospace Engineering Department Head Dr. James B. Eades. The presentation was made in Mission Control Center-Houston during the Gemini VII/VI mission. Kraft received his Sigma Gamma Tau key November 12 while visiting the VPI campus as part of the Hampton, Va., area "Christopher C. Kraft Day." (See Nov. 26 *Roundup*.)

World's First Rendezvous

(Continued from page 1)

VII, naturally inquiring over the Canaries how far ahead they were.

"As we progressed during the mission, we thought we were running one of the best simulated net simulations we had ever had. The ground controllers, the predictions, the equations, all the numbers that had been generated for over two years were falling into place.

"The burns that we made to adjust our orbit, to change our catch-up rate, to raise our perigee, were almost classic, they were so pure. Our updates were exactly as we had hoped they would be. The data came to us very nicely. Unfortunately, it turned out, our transmissions weren't as crisp. We could receive everything from the ground.

"The greatest delight I suspect both Tom and I had was when we made our 'tweak' burn. To describe what this 'tweak' burn is: We were making burns on the order of 40 or 50 feet per second to adjust the various phases of the orbit.

"At the termination of the major velocity burn, we would have residuals, or little bits of velocity to clean out in all three axes. These might amount to three-tenths of a foot per second. On one occasion, one was about seven-tenths of a foot per second. Then we made minute little burns to bring these velocities toward zero, which was the remaining velocity.

"Then, after all this wrestling, final phase adjust or height adjust came up from the ground, 'You have a .8-foot per second burn to make.'

"As we progressed through the various maneuvers to effect a point in space which we describe as the NSR—this is the co-eliptic burn—we realized that we were working with a very professional team who had fed us all of the good information that we needed.

Stafford interjected, "We got the purest trajectory you could ever have. And, so, Chris, I want to say thanks again to your Flight Dynamics group. It was really a great vector.

"We proceeded on in there and meanwhile we had our own tremendous team cooperation, Wally and myself calling out ranges, Wally was tracking on the target while I was interrogating the computer and also analyzing the radar data."

Schirra continued. "The first time we saw spacecraft VII was at 54 miles slant range. They were illuminated by a reflected sun light. We saw them for a balance of about 12 minutes and lost them at about 30 miles. Fortunately, this time span was the exact time span that we needed for onboard computation in case we had lost either the radar, computer or the platform.

"We reacquired the target by the radar presentation, the needles indicate elevation and azimuth when they know indicating as a plus or as ILS presentation as we recognize it. We were back on target. At that point, we did see spacecraft VII with their

FAR-AWAY PLACE WITH STRANGE-SOUNDING NAME—The island of Socotra off the coast of Somaliland in the Indian Ocean, and south of the Arabian peninsula, was photographed during one of the passes by Gemini VI. The top of the photo is northwest.

light. This is about 22 to 23 miles. From then on, we could see spacecraft VII all the way into intercept.

"As we approached Gemini VII and the first point where we had to take over in the cockpit completely and observe VII as well. It's about three miles. Somebody from another place said when you come within three miles, you've rendezvoused, that's when we were really shattered, we said, "We're getting in there, from here on, the job really starts.'

"If anybody thinks they've pulled a rendezvous off at three miles, have fun. This is when we started doing our work.

"I don't think rendezvous is over until you are stopped, completely stopped with no relative motion between the two vehicles at a range of approximately 120 feet, that's rendezvous. From there on, it's station keeping, that's when you can go back and play the game of driving a car or driving an airplane or pushing a skate board, it's about that simple.

"As we progressed into our Gemini VII, using the docking light as our target, we finally came into a range of about 700 feet. This sunlight on VII was absolutely the brightest thing I have ever seen in my life, my eyes hurt, it was a klieg-like carbon-arc lamp completely saturating my eye balls, they were of course dilated due to the dark adaptation for approximately 30 minutes and immediately without any hesitation, boom, this light comes on. We even then managed to have a little bit of a giggly chuckle saying 'I guess we're here.'

"From there on, it was a case of maintaining very small rates as we closed until finally we were, as Tom was quoted at least as saying, 'at 120 feet sitting.' His statement was really 'at 120 feet, steady.' This was our real proud moment. As we continued from this point we were almost directly below spacecraft VII. We eased up to what we call SEF attitude.

"As we kept working into the rendezvous, the two spacecraft were oriented pointing toward each other, VII with their transponder and VI with the radar and we were head down as we came into the final phase and stopped at 120 feet and then finally eased on down just directly below and then came up into an attitude where VII was leading us in orbit in the attitude we call BEF, blunt end forward, and we were in the attitude of SEF, small end forward. This is the nose-to-nose routine and as a result of this, we got our complete confidence up and did close to about one foot in this position. Later, in an in-plane and out of plane fly around—Tom was flying as well—he closed to within about one foot.

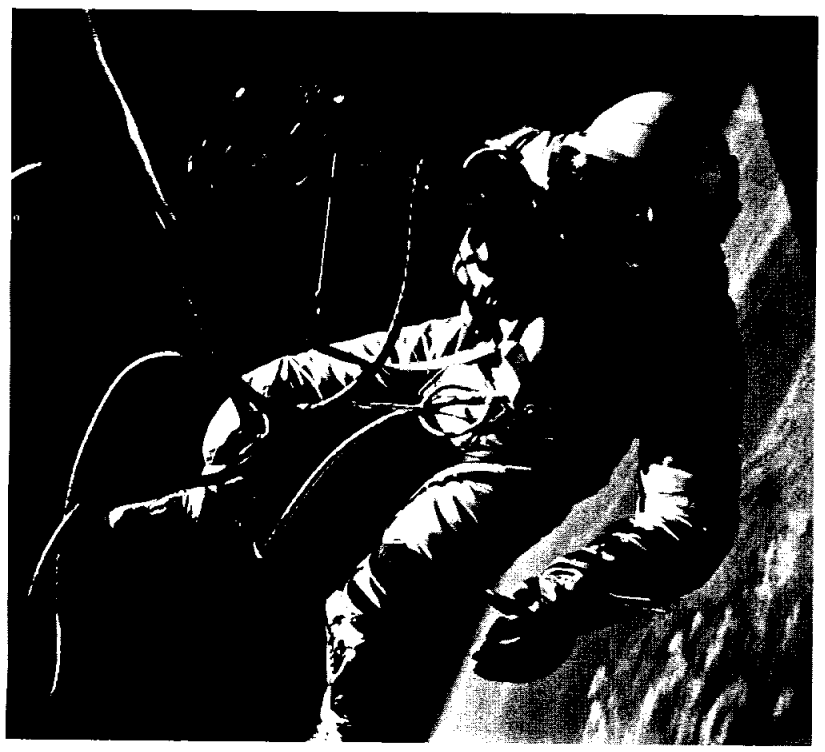
"From this point on, we had one other experiment to perform and this was really for the Apollo Program. We wanted to check an optical sextant against the spacecraft VII so we backed away at a very precise velocity and Tom measured an angle between the star series and Spacecraft VII. Then we logged a great series of these.

"We proceeded on and finally, I guess about 15 hours in orbit, we decided to try out some of that sleep stuff. The other fellows had been doing so well at it and frankly, we didn't have to try it—we collapsed on the spot.

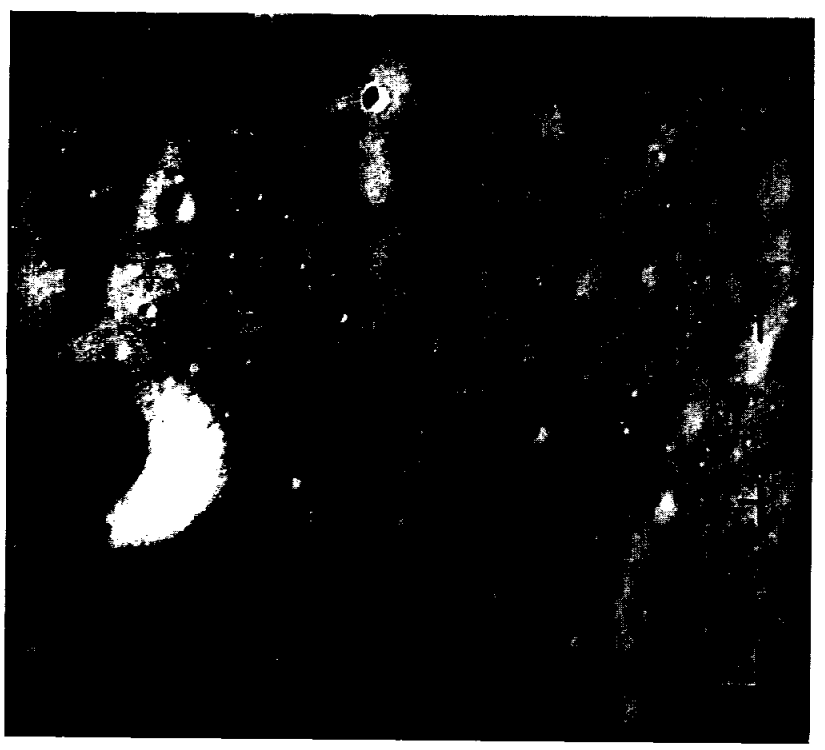
"We had special switch in there called a silent switch. This is to turn off the headset of one of the crew members. We didn't even get to that, we just collapsed.

"We, too, had a retrofire and we, too, had a reentry and we, too, came to the carrier. Now the only thing that was different is, having done this once before, I thought I would like to try it again. We brought our spacecraft back with us and if there is a disparity in where we landed, at least we can say we came to the carrier in our spacecraft.

1965—A Year of Achievement in the Nation's M



EXTRA-VEHICULAR EXHILARATION—Gemini IV Pilot Edward White made the first American exit from an orbiting spacecraft during the third revolution Gemini IV stateside pass at the end of a 25-foot tether, and using a hand-held propulsion gun.



LUNAR CLOSE-UP—Cameras aboard Ranger IX made this television-relayed photo 8.09 seconds before impact from an altitude of 12.2 miles. Area shown is 5.8 by 5.3 miles. Large crater at left is 1.6 miles across.

MARSSCAPE—Climax of Mariner IV's 350-million mile flight was 21 close-up computer-reconstructed photos of the martian surface when the spacecraft passed within 6,118 miles of Mars on July 14, 1965.

For the sophisticated space observer, 1965 was an International Quiet Sun Year (IQSY). For others, it was the year of the two-man Gemini flights and the year that American spacecraft sent photos back from Mars and the Moon.

The National Aeronautics and Space Administration went to launch pads 30 times. Twenty-nine of these trips were attempts to launch spacecraft; one was a launch vehicle test with no spacecraft aboard, and one had two spacecraft.

During 1965 there were 23 NASA mission successes out of 28 attempts for a success percentage of 82, and 26 launch vehicle successes out of 30 attempts which included three non-NASA spacecraft, a record of 87 percent.

This record made the year a big one for lunar and planetary scientists and engineers and for astronauts.

Manned Flight

NASA began the year with an unmanned suborbital flight of its Gemini 2 spacecraft in January. There followed, in the year, five manned flights of the Gemini which included a space walk, a rendezvous in space, and two long-duration flights.

The Cooper-Conrad flight in the Gemini 5 (Aug. 21-29) was for eight days, and the Borman-Lovell flight in the Gemini 7 (Dec. 4-18) was for 14 days.

It was in the McDivitt-White flight (June 3-7) that the United States first succeeded in extra vehicular activity when Astronaut Edward H. White II, climbed out of his orbiting Gemini 4 spacecraft and took a 20-minute, 17,500 miles-per-hour stroll across the U.S. Once outside the spacecraft he used a hand-held propulsion gun for maneuvering in space.

Scientific Spacecraft

These manned missions shared public attention with the exploits of a highly successful stable of scientific spacecraft which included the Ranger, Mariner, Pioneer, Pegasus and five more of the Explorer series, bringing to 31 the number of Explorer satellites launched by the U.S.

Rangers VIII and IX, between them, televised to Earth some 13,000 photos of the lunar surface. These, added to those taken by Ranger VII in 1964, brought to more than 17,000 the number of Moon surface photos taken by three U.S. Ranger spacecraft. The photos are under study by scientists throughout the world.

The Mariner IV, after its 325-million-mile, 228-day journey to Mars returned the first close-up pictures of the Martian surface. Mariner IV was not a life-detection spacecraft and it neither confirmed nor ruled out the possibility of some form of life on Mars but found no measurable meteoritic dust, magnetic field or radiation belt. A thin atmosphere was detected.

In the scientific series, NASA also succeeded for the second time in orbiting two satellites with one launch vehicle. On Nov. 28 the Alouette II (Canadian) and the Explorer XXXI spacecraft were launched together from the Western Test Range by a Thor-Agena booster.

Three Pegasus satellites, each with panels spanning 96-feet were launched during the year and have since returned meteoroid impact data useful to designers of future spacecraft for long-duration manned flights.

International Launches

The Alouette was the first of two international launches during the year. On Dec. 6 NASA put into orbit from the Western Test Range the French scientific satellite, FR-1. These launches were part of a broader program of international cooperation in space which included more than 65 countries.

The recent French launch marked the 13th success in a row for the Scout launch vehicle.

The Early Bird

A national milestone was achieved when NASA launched the first commercial satellite, Early Bird, for the Communications Satellite Corp., April 6. This was a direct result of NASA's research and development in the field of synchronous satellites.

An interim operational satellite was launched by NASA for the Weather Bureau. TIROS X, placed in orbit July 2, was paid for by the Weather Bureau.

Apollo

Of importance to the forthcoming Apollo program was the remarkable success of the Saturn I rockets. The Saturn I was completed during the year following 10 successful launches in 10 attempts, a record not achieved in any other rocket development program. The technology, hardware and experience developed in this program paved the way for forthcoming launches of the Saturn IB.

Also in the Apollo program progress was made in the development and testing of the engines to be used in the Saturn V, with a 100 per cent record of ground tests.

Flight Failures

NASA experienced five failures during 1965.

One failure was in a vehicle test of an Atlas-Centaur rocket at Cape Kennedy in March, but this was followed by a successful Atlas-Centaur test in August.

At the White Sands Missile Range in New Mexico a test of the Apollo launch escape system failed (May 19) to attain the desired results. Although the escape system cleared the rocket, the Little Joe launch vehicle failed to loft the escape system to the altitude needed for more definitive results.

FULL-DURATION BURN—A test version of the Saturn V first stage, the S-IC, was test fired at Marshall Space Flight Center for a full-duration two and one-half minute burn. The stage is powered by five F-1 engines, each developing one and one-half million pounds thrust.

UNSCHEDULED TEST—All was not lo carrying Apollo Command Module B broke up at 14,000 feet over the W Launch Escape System (LES) was dem emergency conditions.

'anned and Unmanned Space Flight Programs

OGO II, launched Oct. 14 at the Western Test Range has been labeled a failure by the space agency although all its booms deployed and it returned good experiment data. The spacecraft ceased normal operation Oct. 23 when its attitude control system gas supply was depleted. The gas depletion was associated with automatic maneuvers to restabilize OGO because one or more of its horizon scanners tracked temperature gradients (possibly cold clouds) near the Earth's surface rather than the horizon itself. Although no longer able to lock on the horizon, OGO still provides valuable data periodically from many of the 20 experiments on board.

NASA's attempt to launch a third Orbiting Solar Observatory after two successes, failed Aug. 25 when the third stage of the Delta launch vehicle ignited prematurely.

NASA's first attempt on Oct. 25 to effect a rendezvous in space failed when the Agena target vehicle did not achieve orbit. The Gemini 6 spacecraft with Astronauts Schirra and Stafford, scheduled for the October mission was rescheduled for the December dual launch in which Gemini 7 and 6 "flew formation" and photographed each other, on Dec. 15, thus achieving America's first rendezvous in space.

Solid Fuel Rockets

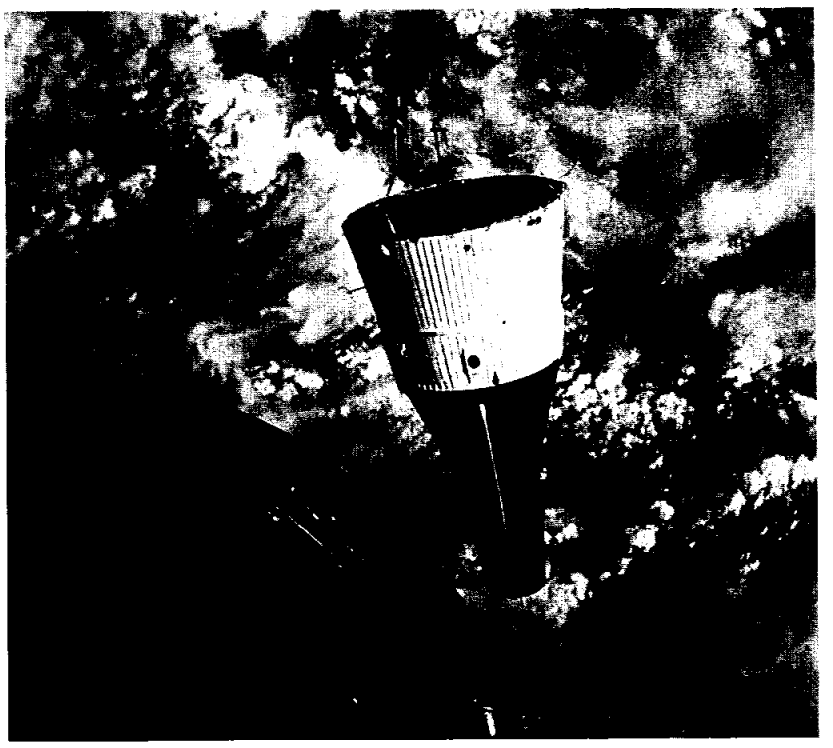
The world's largest known solid fuel rocket motor (260 inches in diameter and 80 feet long, including the 20-foot nozzle) was successfully fired in ground tests Sept. 25, developing 3.5 million pounds of thrust.

Aeronautics

Work was begun on Phase II of the ramjet engine research program, leading to preliminary design for what may well prove to be the engines of the future for hypersonic (in excess of 3,000 mph) flight through the atmosphere or for Earth-to-orbit vehicles.

On Sept. 28 the X-15 research airplane made its 150th successful flight. It has flown to the record altitude of 67 miles and at the record speed of 4,104 mph. A modified version now flying is expected to exceed 5,000 mph.

The flight research phase of the M-2 lifting body program was well advanced in 1965 and a flight model of this wingless aircraft was delivered for high altitude tests expected to take place early in 1966.



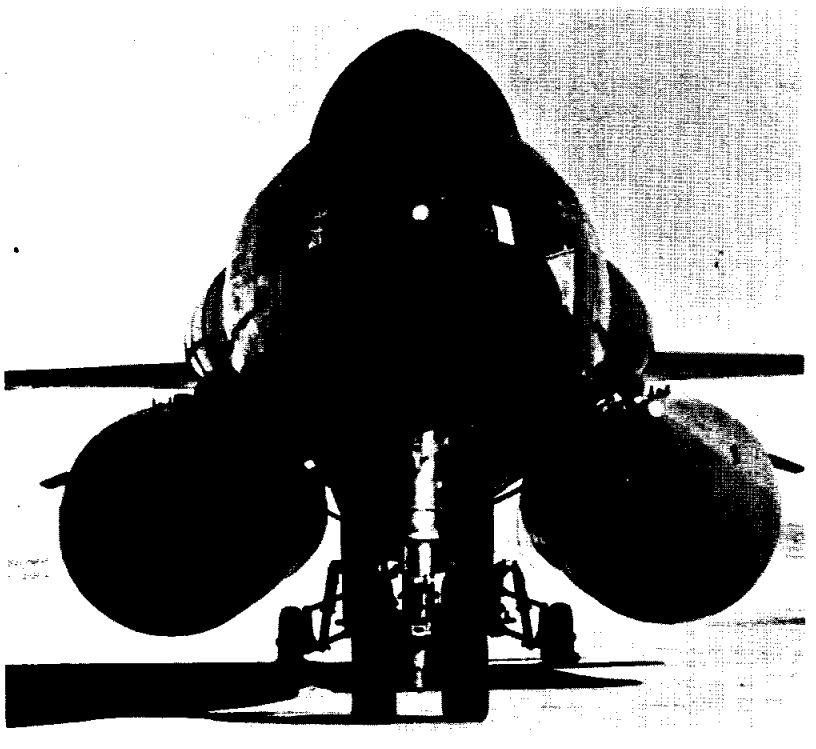
YEAR'S SPACE CLIMAX—Rendezvous of Gemini VII and VI over the western Pacific December 15 was perhaps the most spectacular U.S. spaceflight achievement during 1965. The dual mission produced the first rendezvous and the spaceflight duration record of 14 days.

MAJOR NASA LAUNCHES—1965

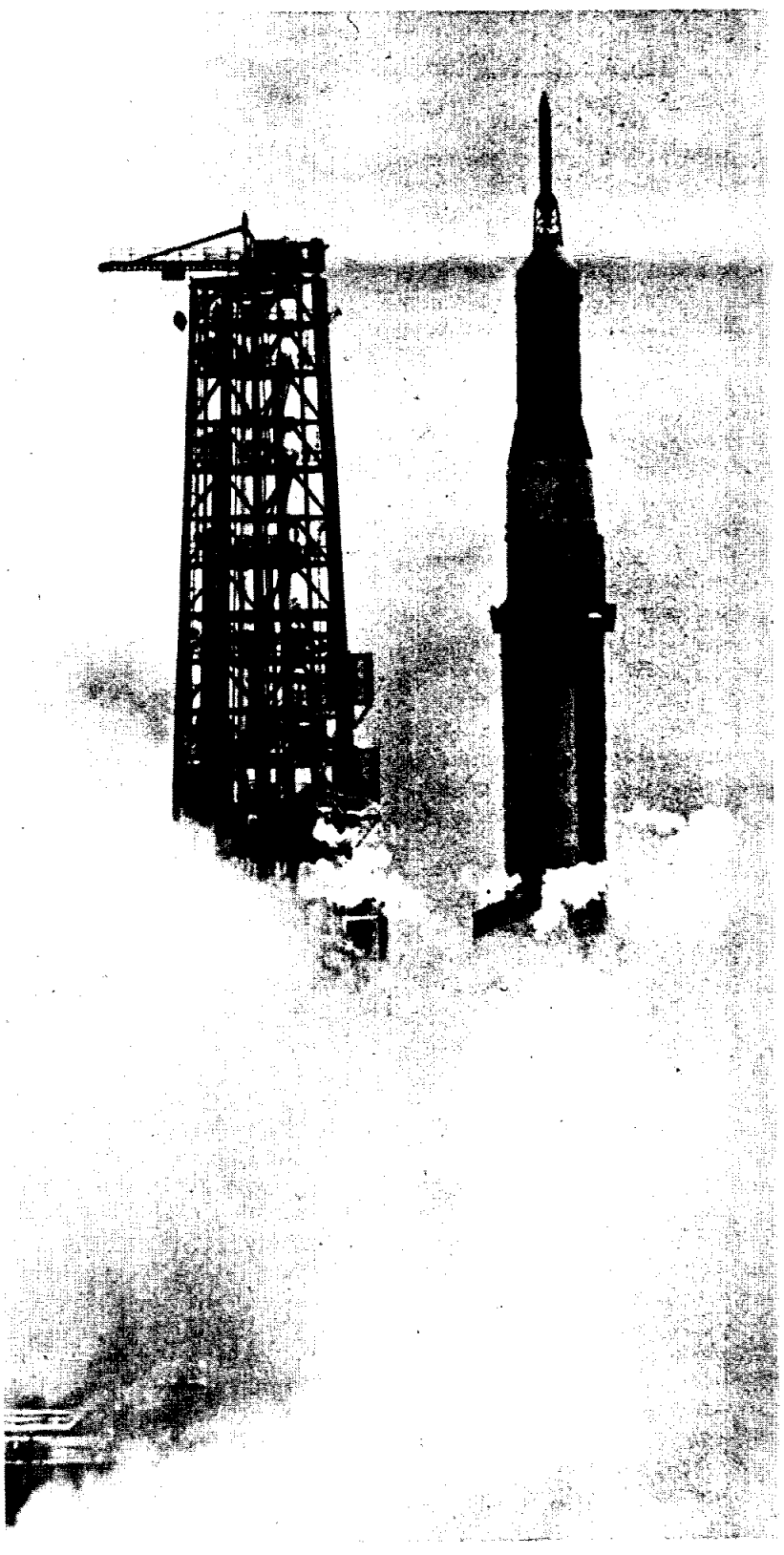
Date	Name	Launch Vehicle	Launch Site	Mission	Results Vehicle	Results Mission
1/19	Gemini 2	Titan II	Kennedy	Unmanned Suborbital	S	S
1/22	TIROS IX	Thor-Delta	Kennedy	Weather Observation	S	S
2/3	OSO II	Thor-Delta	Kennedy	Solar Observation	S	S
2/16	Pegasus I	Saturn I	Kennedy	Meteoroid Detection	S	S
2/17	Ranger VIII	Atlas-Agena	Kennedy	Moon Photography	S	S
3/2	Atlas Centaur 5	Atlas-Centaur	Kennedy	Vehicle Test	F	F
3/21	Ranger IX	Atlas-Agena	Kennedy	Moon Photography	S	S
3/23	Gemini 3	Titan II	Kennedy	Manned Three-Orbit	S	S
4/6	Early Bird	Delta (TAD)	Kennedy	First Commercial Comm. Sat.	S	S*
4/29	Explorer XXVII	Scout	Wallops	Geodetic Studies	S	S
5/19	Apollo Hi-Abort	Little Joe II	Wh. Sands	Hi Altitude Abort System	F	F
5/22	Fire II	Atlas	Kennedy	Re-entry Heating	S	S
5/25	Pegasus II	Saturn I	Kennedy	Meteoroid Detection	S	S
5/29	Explorer XXVIII	Delta	Kennedy	Interplanetary Studies	S	S
6/3	Gemini 4	Titan II	Kennedy	Manned 4 day Mission	S	S
7/2	TIROS X	Delta	Kennedy	Weather Observation	S	S
7/30	Pegasus III	Saturn I	Kennedy	Meteoroid Detection	S	S
8/10	Scout Evaluation	Scout	Wallops	Launch Vehicle Evaluation	S	S
8/11	Atlas Centaur 6	Atlas-Centaur	Kennedy	Vehicle Development	S	S
8/21	Gemini 5	Titan II	Kennedy	Manned 8-Day Mission	S	S
8/25	OSO-C	Delta	Kennedy	Solar Observations	F	F
10/14	OGO II	(TA) Thor-Agena	Pacific	Geophysical Observations	S	F
10/25	Gemini Target (GTV)	Atlas-Agena	Kennedy	Rendezvous with Gemini	F	F
11/6	Explorer XXIX	Delta (Impr. TAD)	Kennedy	Geodesy (Earth Mapping)	S	S
11/18	Explorer XXX	Scout	Wallops	Solar Astronomy (for IQSY)	S	S*
11/28	Alouette II) Explorer XXXI	Thor-Agena B**	Pacific	Topside Sounder Direct Ionospheric Meas.	S	S
12/4	Gemini 7	Titan II	Kennedy	Manned 2-week Mission	S	S
12/6	FR-1 (French)	Scout	Pacific	Ionosphere & Electron Study	S	S*
12/15	Gemini 6	Titan II	Kennedy	Rendezvous with Gemini 7	S	S
12/16	Pioneer VI	Delta (Impr. TAD)	Kennedy	Interplanetary Data Collection	S	S

*—Not NASA Mission
**—Two Spacecraft Launched By One Booster
F—Failure
S—Success

t when the Little Joe II launch vehicle
ilerplate 22 into a high-altitude test
hite Sands Test Facility. The Apollo
onstrated under actual unscheduled



CANTEENS FOR A LONGER DRINK—Two 25-foot long fuel tanks attached to the fuselage of the X-15 research airplane during 1965 will permit the craft to break the 5000 mph mark. The X-15 has flown to a record altitude of 354,200 feet and has logged more than 150 missions.



LAST SATURN I LAUNCH—The Pegasus III meteoroid strike satellite was launched July 30, 1965 from Launch Complex 37 atop SA-10, the last in the 100-percent successful series of Saturn I launches.

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

Director . . . . . Dr. Robert R. Gilruth
Public Affairs Officer . . . . . Paul Haney
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Out Of Texas' Past . . .

(EDITOR'S NOTE: To acquaint MSC employees with the rich historical background of the Galveston Bay area, and of Texas in general, a series of historical articles prepared by the Historical and Library Services Branch will appear in the Roundup.)

The most audacious action ever undertaken by the legendary supermen of Texas was not something that occurred on the Chisholm Trail, nor on the battlefronts of the War Between the States, nor even inside that great shrine to human valor, the Alamo. The most ambitious, adventurous, daring and reckless enterprise ever embarked upon by the sons of the solitary star was the Santa Fe Expedition of 1841.

The venture was inspired by Mirabeau Lamar, the Georgia-born poet-president who dreamed of a Texas empire—forever free of the United States—a Greater Texas that would embrace all of present New Mexico, Arizona, Nevada, California, Washington and Oregon.

With the Santa Fe Expedition, Lamar hoped to realize — by peaceful means if possible—the first segment of that dream by bringing half of present New Mexico and its then principal city under voluntary political control of the Texas Republic.

The Texas Congress opposed the scheme and refused to appropriate any money for it. But Lamar withdrew the necessary funds from the treasury by executive decree and sent 50 merchants and 270 soldiers under Gen. Hugh McLeod off to Santa Fe, along with three commissioners bearing a magnanimous note inviting New Mexico to join the Lone Star in fact as well as by already existing Texas laws.

The chief chronicler for this fantastic project was George W. Kendall, the distinguished "Kendall of the Picayune," who wrote in the opening of his "Narative" of the expedition:

"A company of volunteers, comprising some of the most enterprising young men residing in and around Houston, had been formed, and all were busy . . . Every gunsmith in the place was occupied, night and day, in repairing guns and pistols; every saddler was at work manufacturing bullet-pouches, and mending the saddles and bridles of the volunteers."

In the three months it took the Texans to reach Santa Fe, they ran out of food and water and lost many of their horses. "Every tortoise and snake, every living and creeping thing," wrote Kendall, "was seized upon and swallowed with a rapacity that nothing but the direst hunger could induce. Occasionally a skunk or a polecat would reward someone more fortunate than the rest."

Before Santa Fe, Governor Armijo met the weary and starving Texans with fresh troops, spurned the message from Lamar, took the entire company prisoners and marched them off on foot and in chains to Mexico City, 2000 miles away.

Kendall, a United States citizen, had a passport endorsed by the Mexican consul in New Orleans, but he endured the death march with the others. Many members of the expedition died of starvation, exposure and smallpox. The rest suffered the most cruel hardships, and those who survived were thrown into dungeons in the Mexican capital.

Finally in June of 1842 most of the survivors were released, largely through diplomatic pressure from the United States and England.

But the meticulous notes that Kendall had kept during the journey were seized by his captors, and when he finally got home to New Orleans he had to write much of his two-volume report from memory. Being a great reporter, he did a magnificent job.

So ended Mirabeau Lamar's dream of a Texas that would surpass the United States. Not only did Texas fail to annex New Mexico, but she had to fight off a second and retaliatory invasion by Mexico in the spring of 1842.

SPACE QUOTES

APPOINTMENT IN THE COSMOS, *Izvestia*, Dec. 16, 1965.

American cosmonauts together with learned engineers and technicians have accomplished a great success, realizing the first rendezvous in orbit of two cosmic ships.

Starting December 15 at Cape Kennedy at 16:37 Moscow time, Gemini 6 with the assistance of a number of difficult and precisely executed maneuvers for changing the orbit, arrived approximately six hours after start at two to three meters from Gemini 7 . . .

. . . Defining the place of yesterday's achievement in the American cosmic program, Flight Director Christopher Kraft declared that "this is the greatest milestone since the flight of John Glenn, the first American to be placed in orbit around the Earth."

American specialists emphasize that America has risen to first place in duration of flight, but lags behind in the thrust of launch vehicles and the size of cosmic ships. Quoting American experts, the newspaper *New York Times* noted: "It may well be, at least on the basis of a simple first impression from the Gemini flight this week, that the USA at last has captured the technological leadership in general cosmic competition."

THE FLIGHT OF AMERICAN COSMIC SHIPS, *Pravda*, Dec. 16, 1965.

. . . Still, local commentators understand that in August 1962 Soviet cosmic ships piloted by Andrian Nikolayev and Pavel Popovich accomplished the world's first formation flight.

(Editor's note: Vostok III (Nikolayev) closest approach to Vostok IV (Popovich) was 4.3 miles. A slight wedge-angle between the planes of the two Soviet spacecraft and the absence of orbit maneuvering thrusters to permit extended station keeping exclude these flights from the realm of pure rendezvous.)

Space News Of Five Years Ago

Jan. 13, 1961—NASA Announced that a Life Sciences Research Laboratory would be established on February 1 at NASA Ames Research Center, Moffett Field, Calif.

Jan. 15, 1961—NASA began negotiations with French Commission for Spatial and Scientific Research for conducting a cooperative France-American space program.

Jan. 16, 1961—In the message of President Eisenhower accompanying his budget for fiscal year 1962, it was said: "In the program of manned space flight, the reliability of complex booster capsule escape and life support components of the Mercury system is now being tested to assure a safe manned ballistic flight into space, and hopefully a manned orbital flight in calendar year 1961. Further test and experimentation will be necessary to establish if there are any valid scientific reasons for extending manned space flight beyond the Mercury program."

The Mercury-Redstone 1A postlaunch system evaluation tests were completed at Cape Canaveral. Data disclosed that the instrumentation system, communication system, and other components had operated satisfactorily during the flight mission.

Final assembly of first Saturn flight vehicle (SA-1) was completed.

Jan. 17, 1961—First invention award under the authority of the National Aeronautics and Space Act of 1958 given to Dr. Frank T. McClure of the Applied Physics Laboratory of Johns Hopkins for his satellite Doppler navigation system, the $3000 award being presented by NASA Administrator Glennan at NASA Headquarters.

Jan. 20, 1961 — Mercury Spacecraft No. 14 was delivered to Wallops Island for the Little Joe-5A maximum dynamic pressure abort test.

Lurking in Cabinets, Garage, Death Waits for Youngsters

(Part of a continuing series on driving, home and job safety by the MSC Safety Office.)

Some of the most common household cleaning agents used are also the most deadly. An old saying — "Familiarity breeds contempt" — is probably the main reason that each year a half million people are poisoned both accidently or on purpose. Of this number approximately 1700 die.

More than half are adults who should know better, but do not practice the basic rules of safety. Four hundred or more are preschool age children too young to comprehend or understand the meaning of poison.

Control through preventative practices is the best safety measure to exercise in your home. A successful poison control program should include the following:

- Label all cans and bottles, don't depend on your memory alone.
- Keep all home cleaning agents, chemicals, polishes, paints and paint removers out of reach of children.
- Keep all medicines such as baby aspirin, aspirin, and prescriptions in a locked or inaccessible cabinet.
- Never give or take medicine in the dark.
- Never put a poison or toxic substance in a container that has once contained food, such as a milk bottle, canister, etc.
- Accept the fact that children are naturally curious and will eat or drink anything regardless of taste.
- Teach children that some things must be left alone and that all things are not toys.

A quick look around any home will usually reveal enough unlabeled poisons to kill the entire family. Good places to check are under the kitchen sink, in the medicine cabinet, in the laundry room or on low shelves in the garage or workshop.

Some of the more common ones to look for are: soaps, detergents, ammonia, oven cleaner, metal polishes, drain openers, toilet bowl cleaners and insecticides. The medicine cabinet is usually loaded with medicines, detergents, shampoos, hair sprays and other cosmetics, some of which are deadly.

The medicine cabinet is the logical place to keep both new and out-of-date prescriptions. These too, however, are usually poison if taken in doses greater than prescribed. If allowed to set for several years, many out-of-date prescriptions can become toxic due to chemical reactions. The best policy on prescriptions is to use as directed and dispose of the unused portion when the need for them has passed.

The laundry room usually has its own supply of soap and detergents along with the usual laundry cleaning boosters such as bleach and spot removers. These laundry aids are particularly dangerous in that most of them contain petroleum distillates, acids and alkaline solutions.

The garage and workshop are usually chock-full of possible killers. It is here that most people store their garden chemicals—insecticides, weedicides, pesticides—along with paints, varnishes and their associated solvents. The necessity to keep all of these poisons in an appropriate place speaks for itself. The use of these areas for rainy day play rooms increases the danger of accidental poisoning.

Even with the best practices, children cannot always be watched nor can adults be trusted. Therefore, everyone should be prepared to handle such an emergency. Houston residents are fortunate in that a Poisons Information Center is as close as the telephone. It can be reached by dialing JA 6-3731. The Center has on file the antidote for most poisons.

All poisons are required to have the antidote printed on the label. If the container is not available or the label destroyed, the universal antidote should be given. This antidote consists of one part strong tea, one part milk of magnesia and two parts burnt toast. It can be usually made on the spot, but is available through most local drug stores at a nominal cost.

Each home should have one of the excellent charts published by the American Medical Association showing what to do in most cases—these are available to you through your MSC dispensaries. Briefly, all literature will tell you to first call your physician; second, depending on what the poison is and the condition of the victim, either dilute, neutralize or expel the poison, keep the victim warm and quiet, and follow the directions of your physician.

Helpful as it is to know what to do after an accident, prevention is the only real solution. "An ounce of prevention is worth a pound of cure" is certainly a trite but applicable saying. The prevention of accidental poisoning requires a sense of awareness and a good consistent program to keep your home free of hazards. Remember—"The life you save may be your own or that of a loved one."

Gemini Missions Have Barnyard Repercussions

A postcard received at MSC from an irate rural Texas taxpayer said: "You people have your heads in the clouds so much you didn't know that Christmas was near. Next time please schedule your flights at another season. The Christmas cards didn't get addressed. The cakes didn't get cooked. The livestock had to wait each morning before they could be fed. I don't know what we will do when you people go to the moon. Yours for better planning, Mrs. B. P."

Space News ROUNDUP!

MANNED SPACECRAFT CENTER, HOUSTON, TEXAS

EMPLOYEE NEWS

REPEAT CONTRIBUTION—An Instrumentation and Electronics Division Santa Claus presents part of more than $400 worth of athletic equipment and clothing to Boys Harbor Director Homer Bredehoeft. IESD raised the fund in lieu of an exchange of Christmas cards among Division employees. IESD made a similar contribution to the La Porte boys home last year.

Card-Stamp Cash Directed Toward Local Good Works

Money that would have been spent for Christmas cards and postage in a card exchange among employees was collected by one directorate and two division at MSC for more constructive purposes.

The Instrumentation and Electronic Systems Division collected $400 for buying athletic equipment and clothing to present to Boys Harbor in LaPorte. IESD last year raised $200 for buying Boys Harbor sports equipment.

Crew Systems Division, for the second year in a row, diverted card-and-stamp money to a fund of $132 which was given to the Seabrook Volunteer Fire Department to provide food, clothing and Christmas gifts to needy families in the Seabrook area. The 1964 Crew Systems fund was $130.

Some $300 worth of toys was presented the Burnett Bayland Home for Children in Houston by the Flight Crew Operations Directorate, using a fund raised in lieu of exchanging Christmas cards. The generosity with which a downtown Houston department store manager marked down toy prices for Flight Crew Operations committeemen made the fund go even farther.

Boys Home Quarantine Almost Scuttles Holiday

Christmas was on the verge of being just another day for boys at the Harris County Boys Home when their Christmas visits to families were cancelled because of a virus quarantine at the Home.

There were no gifts for them at the Home — just a single Christmas tree—until two local radio stations and one television station broadcast appeals for gifts for the boys. Response was so great that a reverse appeal to stop bringing gifts to the Home had to be broadcast.

Harris County Boys Home Director Fred Hart has extended his and the boys' gratitude to MSC employees and to Clear Lake area citizens who responded to the appeals.

MSC BOWLING ROUNDUP

MSC 5 O'CLOCK MONDAY MIXED LEAGUE

Standings as of December 20

TEAM	WON	LOST
Pacesetters	28	20
Bombers	27	21
Mc H's	26	22
Pot Shots	24	24
Hi Hopes	22	26
Thirds	17	31

High Game Women: T. Bordeaux 193, Blanche Henderson 192.

High Game Men: E. Ray Walker 246, Harley Erickson 220.

High Series Women: Doris Ridenour 506, Gale Mauney 483.

High Series Men: Harley Erickson 592, E. Ray Walker 585.

Most improved bowlers for season thus far:

Men	No. Pins
Hurdle, Chas.	14
Kaufman, Ray	12
Waters, Clyde	11
Blanck, Vernon	10
Arnold, Lloyd	10
Women	**No. Pins**
Tinner, Louise	25
Bordeaux, T.	15
Hurdle, Esther	14
Henderson, Blanche	13
Henderson, Ruby	11
Mauney, Gale	11
Little, Patricia	10
Hardy, Barbara	10

MSC COUPLES LEAGUE

Standings as of December 21

TEAM	WON	LOST
Bowlernauts	41	23
Idgits	40	24
Spastics	37½	26½
Four Friends	37½	26½
Sociables	34	30
Almosts	33	31
Intimidators	32	32
LBD	27	33
Fireballs	27	37
Eight Balls	27	37
Aces	26	38
Fabulous Four	18	42

High Game Women: Gladys Jones 231, Betty Durkee 222.

High Game Men: Ron Durkee 245, Joe Garino and Jean Petersen 237.

High Series Women: Gladys Jones 582, Shirley Yeater 571.

High Series Men: Joe Garino 629, Dan Kennedy 626.

Spring Graduate Center Courses

The University of Houston has established the schedule of courses to be offered for the MSC Clear Lake Graduate Center for the Spring Semester 1966. Nominations for all university courses should be made on the MSC Form 75. Any questions that employees may have should be addressed to the Employee Development Section, ext. 7311.

Spring 1966 Schedule

Course No. & Title	Location	Time
CE737—Matrix Analysis of Structures	Bldg. 13, Rm. 108	7:30-9:00 a.m. MW
EE567—Transistor Electronics	Bldg. 13, Rm. 108	7:30-9:00 a.m. TTh.
EE632—Information Theory	Bldg. 13, Rm. 219	4:00-5:30 p.m. MW
EE634—Control Systems	Bldg. 15, Rm. 102	4:00-5:30 p.m. TTh.
EE/ME691—Numerical Methods in Engineering Analysis	Bldg. 16, Rm. 152	7:30-9:00 a.m. TTh.
POL384—Public Personnel Administration	Bldg. 4, Rm. 277	4:00-5:30 p.m. TTh.
POL638—Seminar in Public Administration	Bldg. 15, Rm. 102	4:00-5:30 p.m. MW
Phy. 461—Celestial Mechanics	Bldg. 16, Rm. 267	7:30-9:00 a.m. TTh.
Math 361—Numerical Methods I	Bldg. 16, Rm. 152	7:30-9:00 a.m. MW
Math 633—Theory of the Functions of a Real Variable	Bldg. 4, Rm. 277	7:00-8:30 a.m. TTh.

Visitor From North Pole

MOPPET MOB—The character Schirra and Stafford saw in polar orbit during the Gemini VI mission reentered and landed in the MSC Cafeteria December 18 for the Children's Christmas Party. The color scheme of his space suit was somewhat different than that of the Gemini suit, but apparently Santa Claus survived. Assisting him in entertaining the kids were local TV entertainers Kitirik and Skipper, and the Tootsie Pohler puppets.

1965-66 MSC/Ellington AFB Basketball League

All games played at the Ellington AFB Gymnasium

American Division		National Division	
Team No.	Name	Team No.	Name
1.	747th Rams	10.	Air Nat'l Guard
2.	Guidance and Control	11.	Tech Svcs Div
3.	Coast Guard	12.	AV Corp
4.	MPAD-Gunners	13.	G.E.
5.	Grasshoppers	14.	FCD
6.	FSD	15.	Philco
7.	ASPO	16.	Univac
8.	2103rd Comm Sqdn	17.	Prop & Power Div
9.	ASTD-Lone Stars	18.	IBM

Schedule for January 10-20

	Jan. 10	Jan. 11	Jan. 12	Jan. 13
6:30 pm	11-10	13-18	17-14	16-15
8:00 pm	1- 5	2- 4	6- 9	7- 8
	Jan. 17	Jan. 18	Jan. 19	Jan. 20
6:30 pm	7- 9	1- 6	2- 5	3- 4
8:00 pm	16-14	13-17	11-18	12-10

Dupe Bridge Club Announces 1966 Tournament Activities

The MSC Duplicate Bridge Club has published its calendar of events for 1966. The Club Master Point games will be held on the last Tuesday of each month. To qualify for the Master Point, individuals must be club members and must have played at least once during the previous four fractional master point games.

Special events for 1966 include the Mixed Pair Championship, Feb. 8; a Special Charity Master Point, March 8; Mens/Womens Pair Championships, April 12; Individual Championship, June 14; and Open Pair Championship, Nov. 7 and 14. In addition, there will be three Series Awards during the year, with the first of the series games taking place on Jan. 11.

Winners of the 1965 Open Pair Championship games held in November were Floyd Goostree and Arthur Carlson. Bob and Terry Hodgson won the Charity Master Point on Dec. 14.

Minimize Mail Mixups By Better Bundling

To head off the chance of classified mail being mailed with ordinary first class mail, Security Operations emphasizes that classified mail should be kept separate from unclassified mail at its point of origin.

Classified cover sheets attached to the package used for transmitting classified material further earmark the mail for proper handling by MSC mail messengers and its subsequent shipment as Registered or Certified mail.

Space News ROUNDUP!

SECOND FRONT PAGE

White Sands Superior Performers

WILLIS D. BROWN
Operations Support Office

CLARENCE CHAUVIN
Flight Test Office

L. GENE LUNDGREN
Propulsion Engineering Office

ROBERT B. MUNSON
Flight Test Office

FIDEL PROVENCIO
Operations Support Office

MANUELA WHITLOCK
Operations Support Office

Anti-Procrastination Poster Contest Winners

DO TODAY'S WORK TODAY—The top three winners in the MSC employee poster contest with the theme of "Do Today's Work Today" (See November 12 *Roundup*) are shown with their entries. Left to right: E. B. Guess, $25 third place; Gwen Seate, $100 first place; Special Assistant to the Director Paul E. Purser, presenting the awards; and Inez Donaway, $50 second place. All poster entries will be displayed in the Auditorium Lobby January 10-21.

Power Squadron Offers Boat Handling Course

A course in piloting and small boat handling is being offered by the Houston Power Squadron, with classes to be held each Thursday night over a 14-week period. Registration for the course will begin at 7:30 p.m. January 13 in the Prudential Building auditorium, Fannin and Holcombe.

The free course is open to the public and is slanted toward the small boat skipper and his wife—safety afloat, seamanship, aids to navigation, charts and piloting, mariner's compass, rules of the road, state and federal regulations and small boat handling.

Experienced boatmen will teach the class. Those passing the final exam will be awarded United States Power Squadron Certificates.

Buy
U.S. Savings Bonds

Gemini VIII Spacecraft, GLV, Nearing Shipment to Kennedy

Spacecraft and launch vehicle preparations for the Gemini VIII mission are proceeding smoothly on schedule. Acceptance Review for Spacecraft VII was held yesterday at the McDonnell Aircraft Corp. plant in St. Louis, and the spacecraft is expected to be shipped to Kennedy Space Center within the next few days.

Both stages of Gemini Launch Vehicle VIII were scheduled to be at KSC by today.

Agena target vehicle 5003 is undergoing final systems tests at Lockheed-Sunnyvale. This vehicle is the next to be launched and will be used in the Gemini VIII mission unless the decision is made to use instead the Augmented Target Docking Adapter, now in manufacture at McDonnell. (See December 23 *Roundup*) The decision as to which vehicle to use for Gemini VIII will not be made for some time.

The engines of Agena 5003 have been modified as a result to the Agena's failure to orbit during the October 25 initial attempt to launch the Gemini VI mission.

Some preliminary testing of the modified engine has been completed successfully at Bell Aerosystems-Buffalo, but initial test runs in the altitude chamber at Arnold Air Development Center, Tullahoma, Tenn., will not begin until late February. The tests will consist of engine starts at varying propellant temperatures at altitudes up to 250,000 feet. A review of the status of test preparations was to have been made by a Flight Safety Review Board at Tullahoma last Wednesday.

The Gemini VIII mission will include one full orbit of extravehicular activity by Pilot Dave Scott. Neil A. Armstrong is the prime command pilot.

Apollo-ites Rack Up 205 Man/Years of Federal Service

SERVICE AWARDS—Four 25-year Service Awards and five 20-year Service Awards were presented recently to employees in the Apollo Spacecraft Program Office by ASPO Manager Dr. Joseph F. Shea, third from left in each photo. In left photo, 25-year Awardees are, left to right: David M. Goldenbaum, Checkout and Test Division; Joseph A. Lynch, Program Control Division; Shea; Ross R. Seger, Checkout and Test Division, and Armistead Dennett, Systems Engineering Division. In right photo, 20-year Awardees, left to right, are: W. M. Bland, chief Checkout and Test Division; Gareth H. Jordan, Program Control Division; Shea; Robert J. Bailey, Executive Assistant, ASPO; Edison M. Fields, Assistant chief Checkout and Test Division, and J. J. Herrmann, Program Control Division.