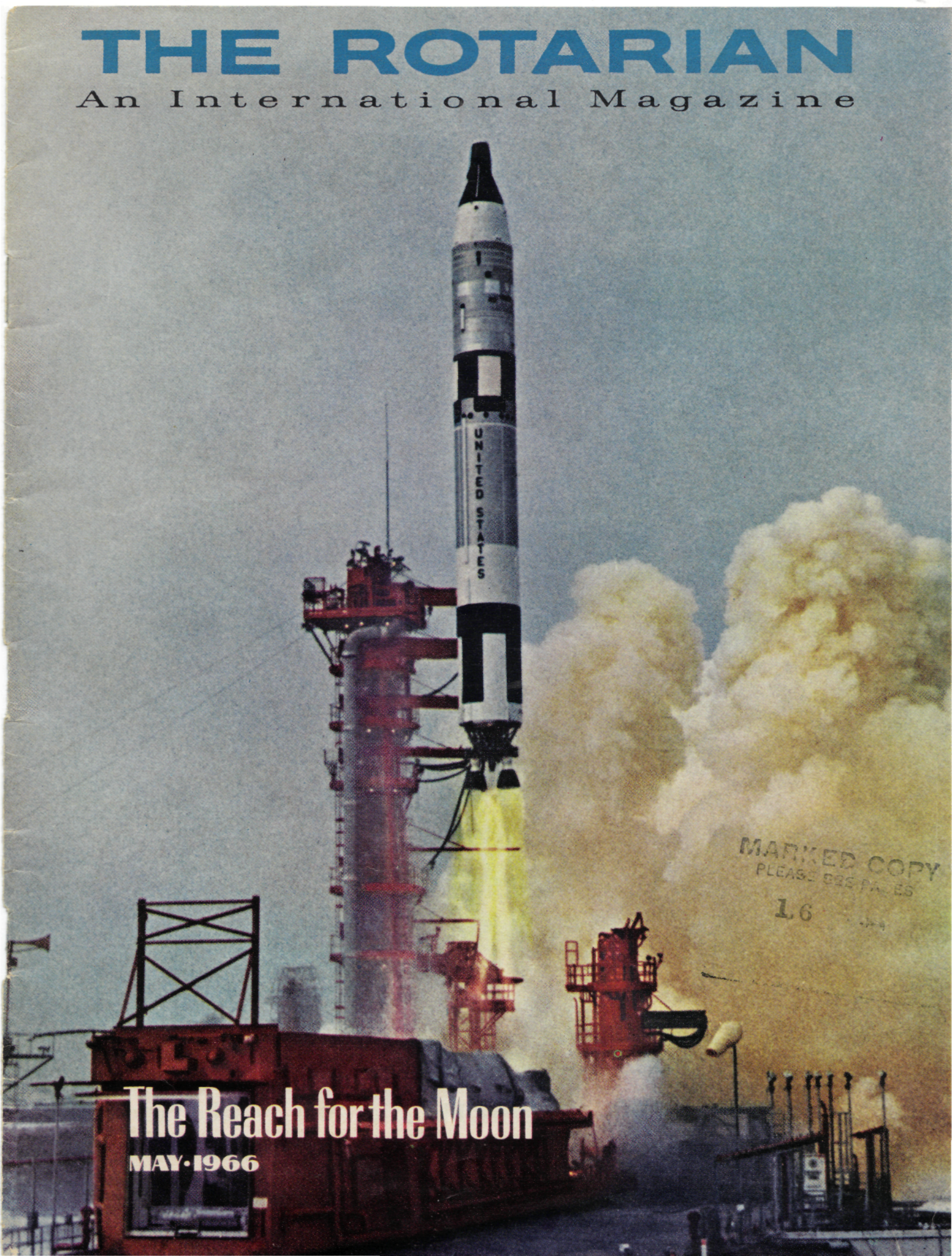


THE ROTARIAN

An International Magazine

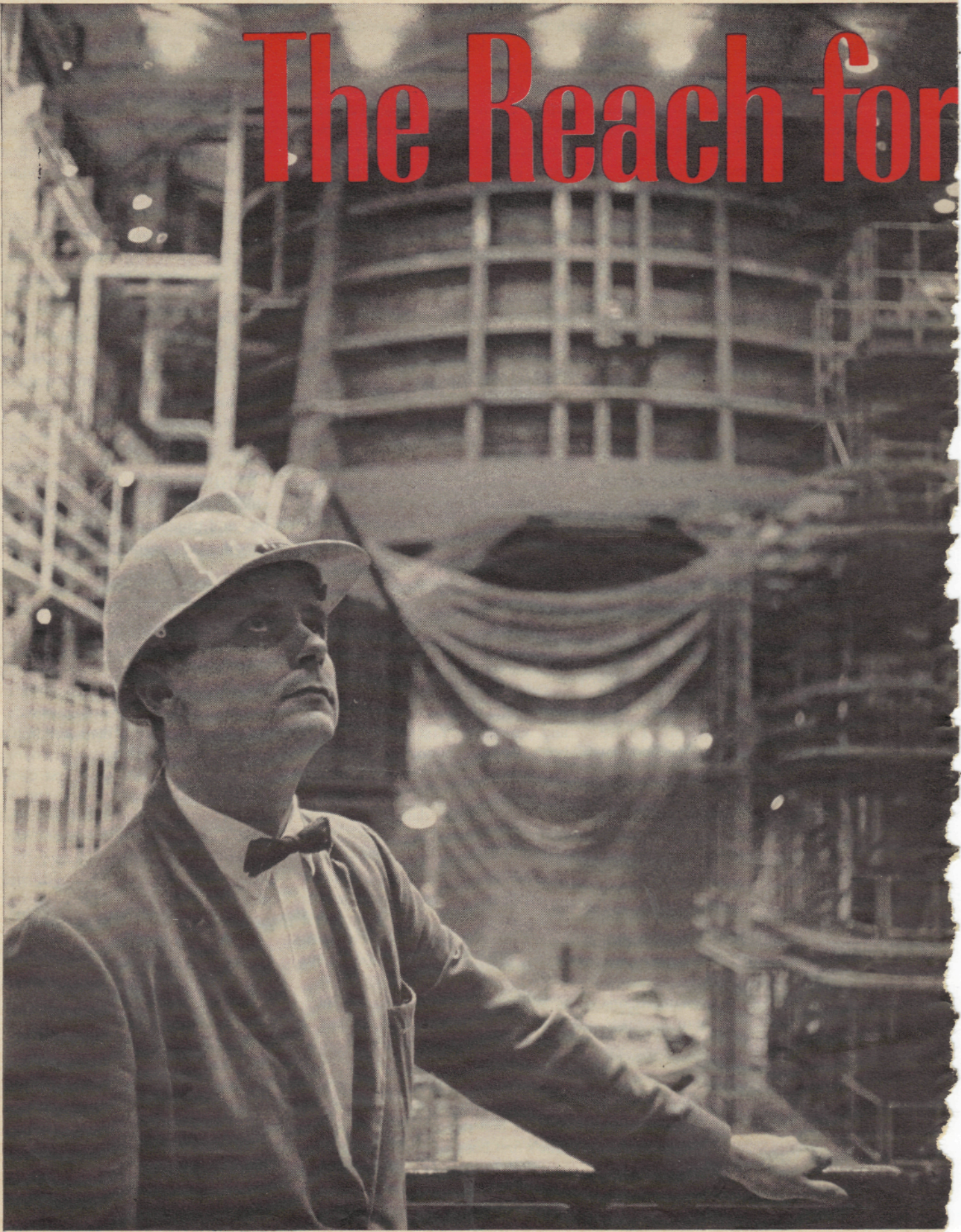


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The Reach for the Moon

MAY 1966

The Reach for



the Moon

Man's first landfall in space is near, and Space Center Rotarians will help it happen.

HIS NAME IS Richard D. Veth, and what he does today will some tomorrow help man fly to the moon and back. An engineer employed by the Northrop Corporation at the U. S. Manned Spacecraft Center near Houston, Texas, his specialty is cryogenics, a still-new field of engineering that deals with the applications and handling of low temperature substances, like liquefied gases.

Behind him in the photo at the left is the Center's nearly completed 120-foot tall space environment chamber. Into the chamber will go spacecraft, astronaut equipment, and other items to be tested in an airless, heat-sapping environment similar to that of interplanetary space. During such tests Richard Veth will supervise, as he now does for tests in a smaller chamber, the operation of the "thermal shroud" that lines the inside of the chamber. Here liquid nitrogen, flowing through a network of pipes in the "shroud" at more than 250 degrees below zero Fahrenheit, gathers up heat radiated by any object placed in the chamber, lowering the object's temperature to that which it might experience on a flight, say, to the moon.

"Dick" Veth is also a Rotarian in the world's most unusual Rotary Club—unusual because it and its community would not exist without man's desire to visit the moon or without the technology to make such a trip possible.

The desire is no doubt as old as man himself. It sent men of the past sailing across oceans in tiny ships, slogging through primeval jungles, and sledging to the icy poles, seeking and exploring. The moon, almost always in sight but tantalizingly out of reach, provided many daydreamers of the past with fuel for fantasy. Writers like Lucian of Greece in the second century A.D. and Cyrano de Bergerac in the 17th wrote romantic fiction based on visits to the moon. In the 19th century, equipped with the best available scientific knowledge, Jules Verne loaded Impey Barbi-



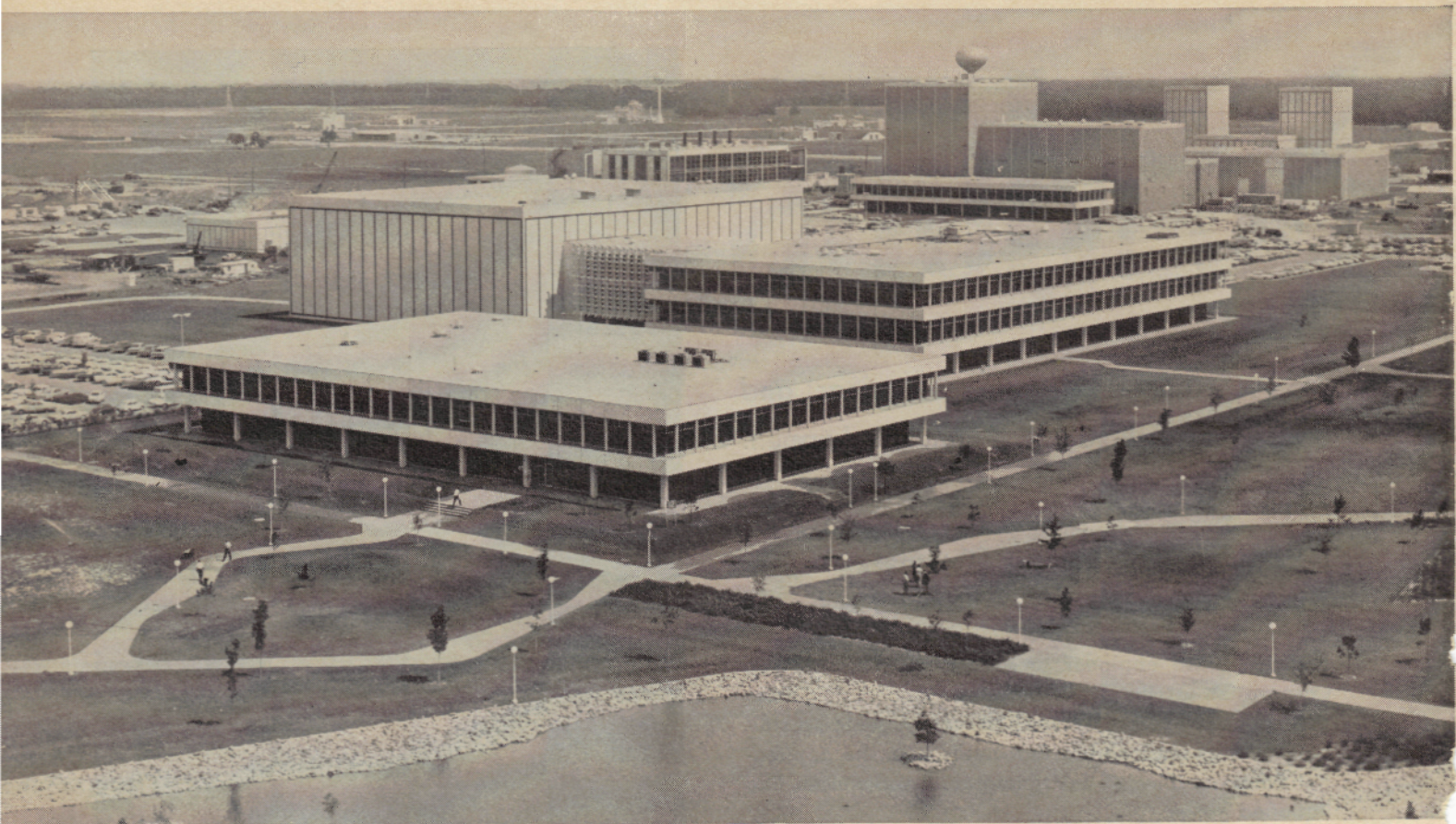
cane and his companions into a cannon projectile for their trip "From the Earth to the Moon."

Technology did not begin to catch up with imagination until 40 years ago when experiments by Dr. Robert H. Goddard, a physicist and later a Rotarian in Roswell, New Mexico, showed the feasibility of liquid-fueled rocket propulsion. Even then few men had faith in his ideas and left them to writers of science-fiction thrillers. Following World War II and the practical, if tragic, demonstration of rocket propulsion by the Nazi V-2 missiles, the idea of space travel gained popular currency and technology broke into a run. The reach for the moon was on.

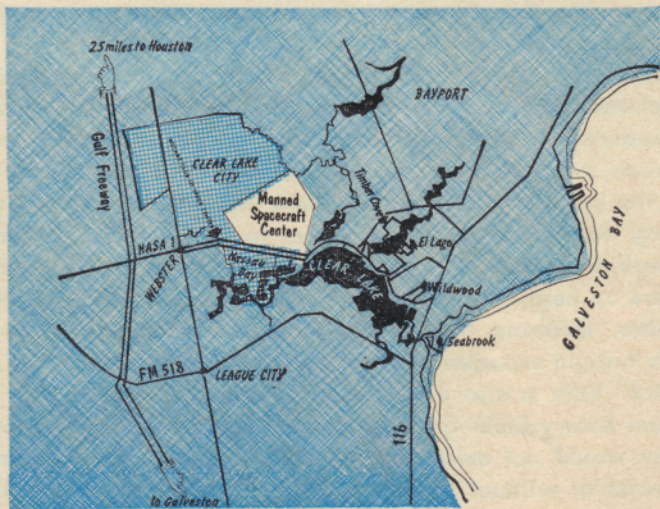
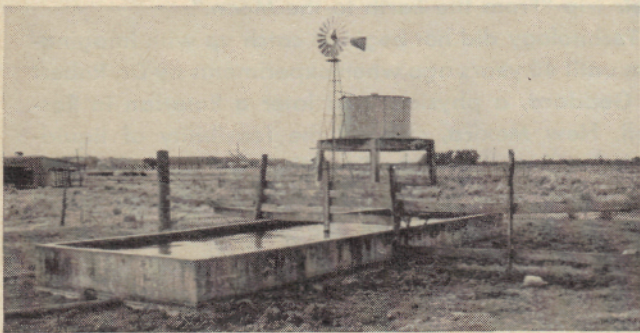
The men who will cross the 238,000 mile near-void of space to the moon are now in training in the U. S. A. and Russia. The U. S. three-man Apollo flight is scheduled for 1969 or sooner; the Russian space planners predict an even earlier flight. Behind the U. S. moon project is a multi-billion dollar investment in research and development involving thousands of scientists, technicians, and others, plus close co-operation with space research programs in a number of other countries.* The project's hands, arms, and eyes are scattered across the U. S. A. and the world, but its brain center is 25 miles southeast of Houston, Texas, at the National Aeronautics and Space Administration's \$200 million Manned Spacecraft Center. Its mission: "The

*See *SPACE: All Nations Frontier* in THE ROTARIAN for November, 1964.

Text by Earle G. Lass • Photos by Sam Nocella from Three Lions



The U. S. Manned Spacecraft Center seen from atop its nine-story Management Building. Mission Control is in the windowless building at center.



Nearly barren cattle land in 1962 (upper left), the immediate area around the MSC is now home for an estimated 7,500 families. Shopping centers like that at left are thriving; more building is underway. Space-age atmosphere extends even to play equipment at Clear Lake City's community center. Note chute from rocket.



The Reach for the MOON

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development of spacecraft for manned space flight operations and the conduct of manned spaceflights."

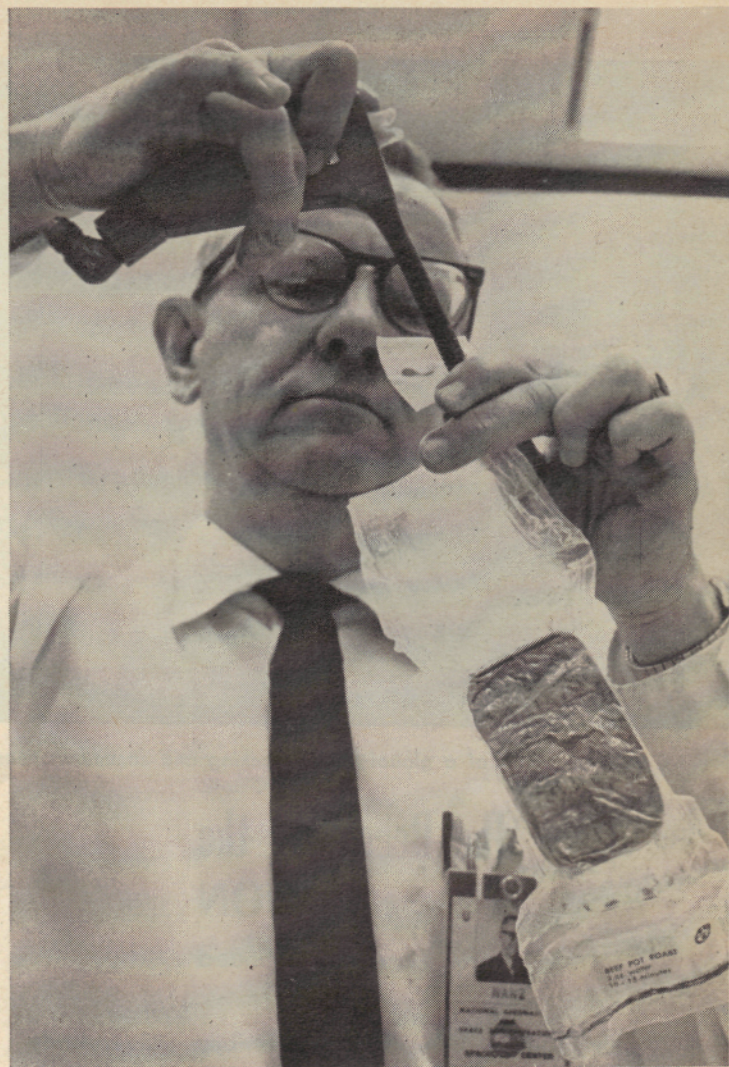
Here 4,700 NASA employees and some 2,000 employees of aerospace contractors explore means to enable men to live in space, develop equipment for use in space flights, train the men who make the flights, design and test flight plans. Here, too, is the Mission Control Center, which controls flights after they leave launch sites, like that at Merritt Island, Florida.†

While the work of the MSC leads directly to the moon mission, its research program has already released a valuable amount of technological "fallout"—new materials, equipment, and processes—that now affect the lives of millions. One piece of "fallout," technologically unexpected, but humanly predictable, was a Rotary Club—the Rotary Club of Space Center, Texas.

DRIVING along the broad, four-lane highway that races to and past the MSC, J. A. Newborn, a Space Center Rotarian, swept his hand in a wide arc that enclosed the Center's milk-white buildings, two giant housing developments, and a bustling business district. "No one who comes here today will believe how sleepy all of this was less than four years ago. It was nothing but pasture with cows wandering over it, and jackrabbits everywhere. This road, why, it was an almost-two-lane affair—little more than a cowpath." A native of the area, "J. A." is the editor and publisher of *The Suburban Journal*, a weekly newspaper that serves some 12,000 subscribers. After some years spent in Austin, Texas, where he operated a radio station and newspaper, "J. A." returned early in 1962 just as the bulldozers began to transform what had once been the 30,000 acre West cattle ranch into what is now the thriving Space Center community.

Following the start of construction on the 1,620-acre MSC the several small towns within a few miles of the site, mostly summer home communities near Clear Lake, were suddenly jammed with construction workers, scientists, astronauts, and employees of aerospace contractors. An acute housing shortage ensued, but eased as developers went to work on several residential sub-divisions. In Clear Lake City and Nassau Bay, the two largest developments, which straddle NASA 1, some 1,200 new homes have now been built, and many more are on the way. Of the immediate area's 35,000 people, about 80 percent have arrived in the past four years.

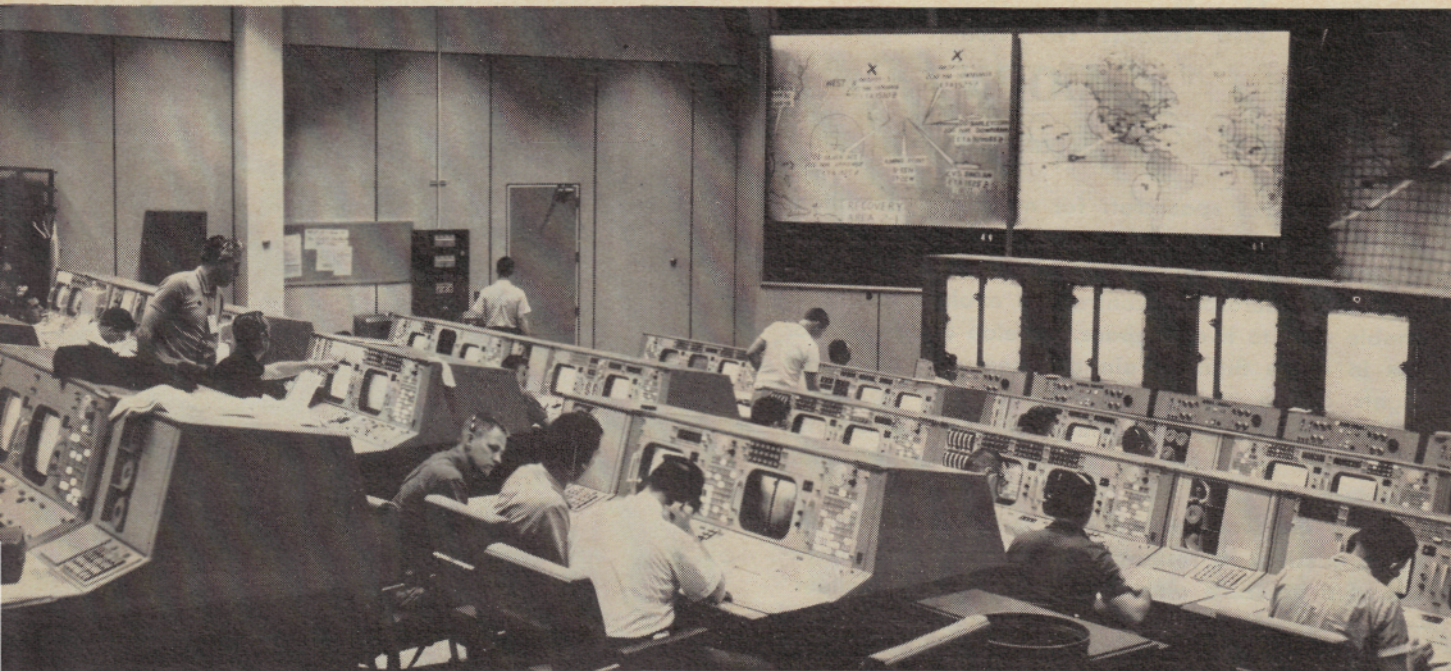
†See *Building Tomorrow's Spaceport* in THE ROTARIAN for November, 1964, for details on this launch site; and *Club in Countdown Country* in THE ROTARIAN for October, 1961, for the story of its Rotary Club.



Beef pot roast, freeze-dried and vacuum packed, is one of 56 kinds of food MSC scientists have checked out for use by astronauts. Water, injected through spout in package, reconstitutes the food for eating.

A high percentage of the newcomers are upper-income professional people, most of them young and, as the Clear Creek Independent School District soon found, with school-age children. Clyde Mason, a Rotarian and an assistant Superintendent of the District's one high school and seven elementary schools, checked into his records and found that the 1964-65 school year had brought the schools about 1,000 new students and some 1,200 more have arrived since May, 1965. "They're making us work to keep up," says he of the new families. "These people recognize and demand a good school system." To keep up, the system, which now holds 5,400 students, has added 20 new school rooms in the past year; expanded its coverage of mathematics, science, and languages. A second high school is in the planning stage.

Signs like "Missileburgers," "Apollo Drive-In," and "Jet-Age Nursery School" in the nearby town of Webster were the first signs of business on the build around the MSC. The spectacle of a population explosion rolling across the once empty land spelled "opportunity" to many a small businessman who called to look over the area. One of them was Karl Wallace, the Space



Command center of a global net of tracking and communications stations, the Mission Control Center controls flights after launch.



The Reach for the MOON

continued

Center Club's veterinarian member. "Everybody thought I'd lost my mind when I sold a going business in Fort Worth to come down to this wilderness . . . but in my first 30 days here I grossed more than I had in any 30 days during my five years in Fort Worth."

There was room here for every kind of business—the big problem was getting it in out of the rain. "Make do" was the rule while construction got underway—J. A. Newborn's first newspaper office was in a residential building, and Ivan Brown settled for a store front to house his budding Nassau Bay National Bank. Four years have brought two shopping centers, restaurants, office buildings, and three new hotels along NASA 1. In Clear Lake City a site is reserved for a spacious research park for aerospace industries.

A visitor to the NASA area cannot long walk among its shiny new prosperity, all of it founded on the space program, without asking the nagging question: "What would happen if suddenly the MSC should fold its astronauts and instruments and disappear?" Another Rotarian, Charles Whynot of the Space City Development Company, supplied an answer: "Never fear. If the space works should vanish overnight the area would suffer a setback, but hardly a disaster, because Bayport would still be there." Bayport, located on the northern outskirts of the old West ranch is the Humble Oil Company's 7,250 acre \$13.4 million industrial

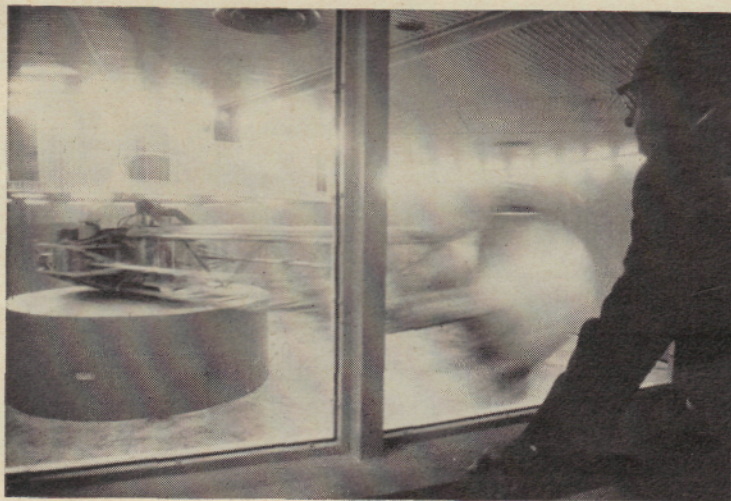
park, which at the end of its 20-year development is expected to hold some \$900 million in tenant investment and 25,000 new jobs.

Sharing the building of new lives in this raw country and the effort to reach the moon has forged a strong bond between the newcomers. They are a transplanted people, hailing from every part of the U.S.A., but they are not strangers. Ivan Brown offered an illustration: "A doctor friend of mine came to me saying he'd like to move out here but was hesitant because he feared he might be an outsider. I told him, 'We're all outsiders here, come on in.'"

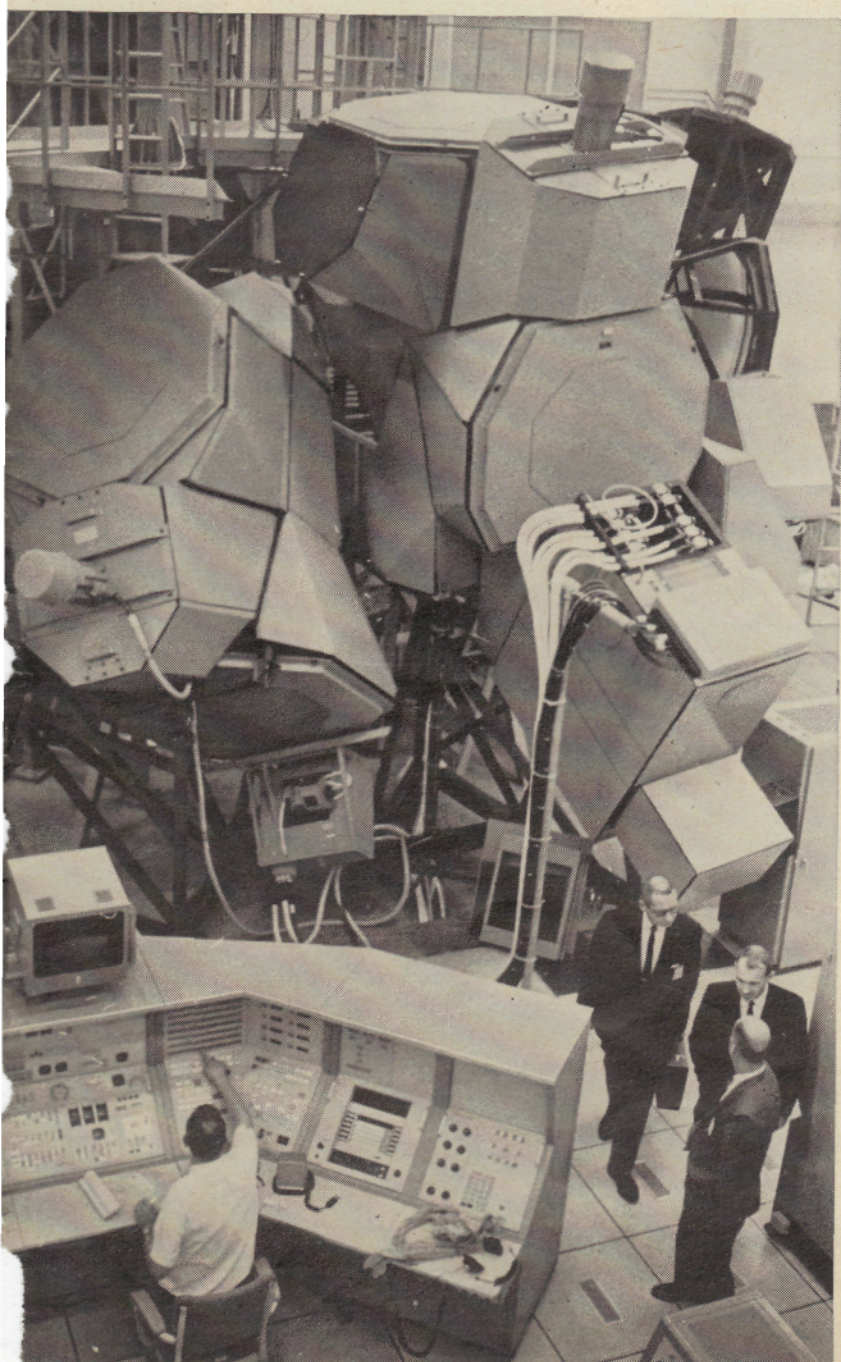
EARLY in 1964 Ellis Bareiss of Pasadena, Texas, acting as a Special Representative of Virgil P. Lee, 1963-64 Governor of Rotary District 589, visited the MSC area to investigate the possibility of forming a Rotary Club. He later reported: ". . . This looks like an ideal area to start a really fine Rotary Club. The people I have met and talked with, I am confident, will make good Rotarians." Less than three months later Rotary International granted a charter to the Rotary Club of Space Center (Houston), Texas. Of the Club's 35 charter about one-third were directly connected with the moon program, including Astronaut L. Gordon Cooper, a former member of the Rotary Club of Hampton, Va. Ivan Brown was elected president and is currently serving a second term.

"It's the strangest Rotary Club in the world—and it has some of the strangest classifications," says Waymon Armstrong, a former member of the Rotary Club of La Porte, Texas, which sponsored the new Club. He now manages the new King's Inn where the Club's 67 members meet each Monday at noon.

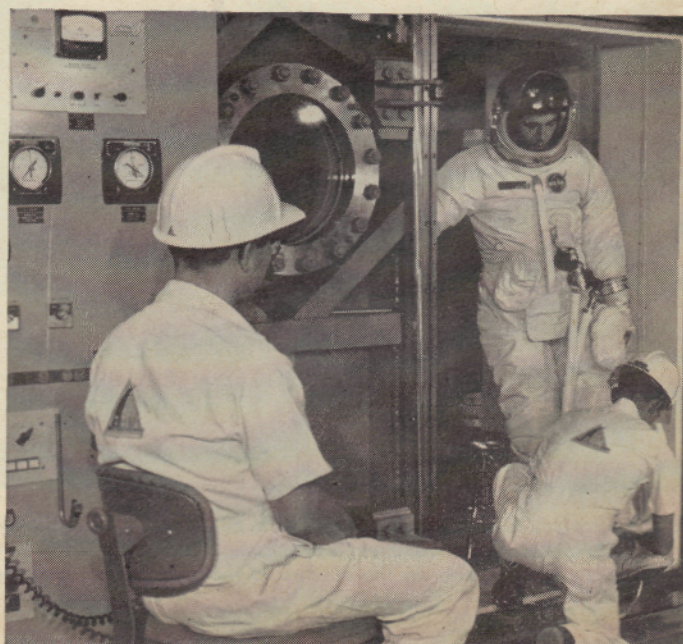
"Strange" or not, Rotary at Space Center looks much



Flashing past observation windows in the Flight Acceleration Facility Building, a 12-foot, 8,000-pound gondola whirls at the end of a 50-foot arm. Soon to be used to train astronauts and to test equipment, the centrifuge is driven by a 10,000 horsepower motor and is capable of developing up to 30 times the force of Earth gravity in its gondola. Engineers (right) put the just-completed unit through its paces. Looking like something filched from a science-fiction film (below, left) is the Apollo flight simulator. Into the center of this maze of equipment goes a mock-up space craft with astronauts inside. Then computers, via the optical systems that envelope the craft, feed to the craft's windows the views of stars and sun the men would see on a lunar flight—continuously adjusted for capsule's motion and position in flight.



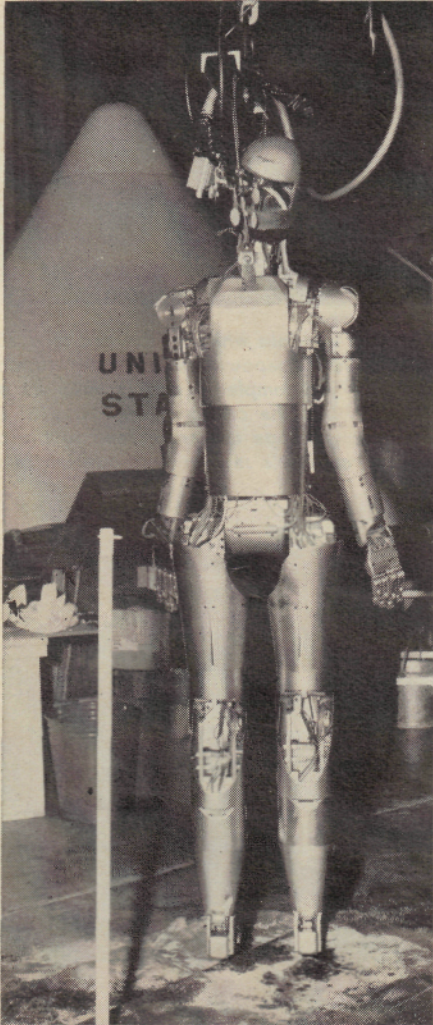
Suits to keep men alive in space are a major research project at the MSC. On the lawn outside one of the Center's laboratories, a crew of engineers check a suit design for freedom of movement. . . . Another researcher (below) suits up prior to entering the airless interior of the smaller of the Center's two space environment chambers.





The Reach for the MOON

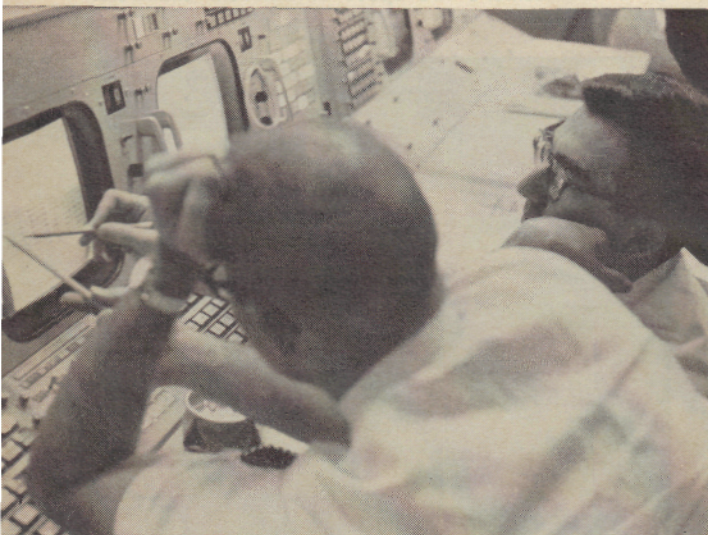
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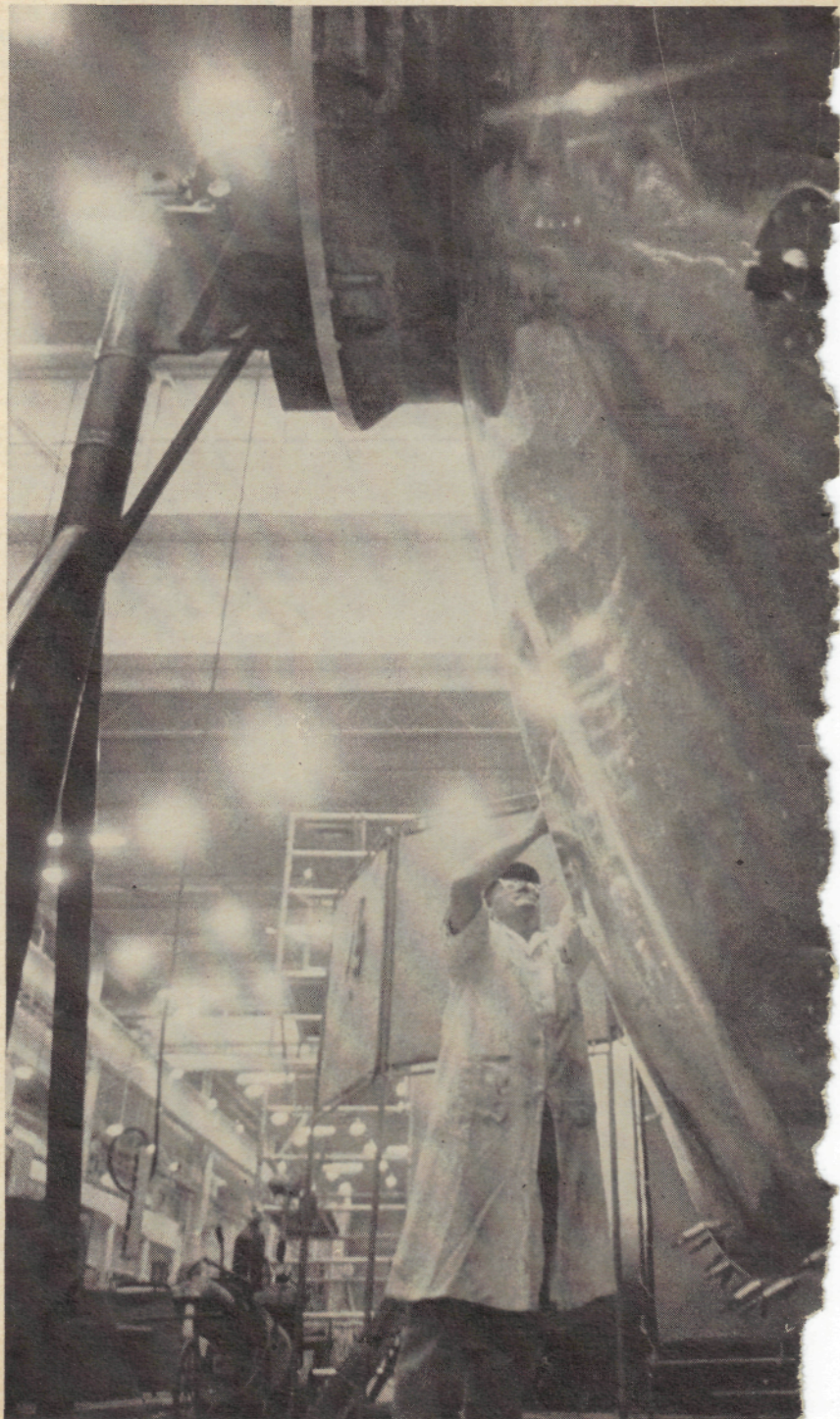
Capable of performing 35 human motions, this hydraulically operated robot (seen from the rear) tests space suit mobility.



From miniscule model space men (above) to full-scale mock-ups of space craft (below), craftsmen of the MSC Technical Services Shop turn design specifications into prototype equipment for use in research and flight simulation.



Before any man or rocket leaves Earth, missions are "flown" via the real-time computer complex, which simulates flight conditions and reports their effects on the mission to the controllers shown here.



like Rotary around the world. If anything sets the Club apart it is the members themselves. A recent sampling showed that: their average age is 43 (nine years younger than the average Rotarian world-wide); at least 95 percent (30 percent more than Rotarians generally) have college educations, many holding advanced degrees; 22 percent now hold or have held pilots' licenses (about 15 percent more than the average for all Rotarians). Says President Brown of his Club: "It's a real joy . . . these fellows are all sharp as a brier."

The Club's meeting time programs also mark it as a bit different from most Clubs. Many of them are based on the space and science vocations of some of the members—those holders of "the strangest classifications." At one recent meeting, for example, Bert Foulds, an employee of the Douglas Aircraft Company, showed films and told of his part in an expedition into Mexico to record the heartbeat of the gray whale. Many programs have a space slant, from demonstrations of new equipment to films of past flights. Thanks

to its exciting programs the Club is seldom without a good supply of visiting Rotarians and guests. Waymon Armstrong recalled, "After the Gemini 7/6 mission we had 120 men in that room." That meeting featured films of the flight and brought NASA Public Affairs Officer Paul P. Haney and Astronaut Frank Borman to describe them. Rotarian Borman was the command pilot of the Gemini 7.

Although the immediate area holds no slums or underprivileged children and few of the conditions that usually attract the help of Rotarians, the Club's community service program is growing. It recently led a successful project to set up a library in Clear Lake City, and it is now at work on forming an Interact Club at Clear Creek High School.

Bailey Chaney mentioned another kind of service, one less obvious but affecting the entire area: "I think the Rotary Club is helping to make a community out of what was a housing development." His fellow Club members agree that the Rotary and Kiwanis Clubs and the Chamber of Commerce add up to a kind of

Some members of the Rotary Club of Space Center gather outside their meeting room at the King's Inn. The Manned Spacecraft Center buildings visible in the distance are a reminder of the rôle these men, their Club, and their community play in man's reach for the moon.





The Reach for the MOON

continued

informal government by providing opportunities for men to meet to discuss and solve local problems.

WITHIN sight of the Club's meeting place is the focus and purpose of the community—the Manned Spacecraft Center. It stands as a constant reminder to the Rotarians of Space Center that, whether they work in a laboratory within the Center or in an insurance office a mile away, they are part of the reach for the moon. Inside the Center's finely sculpted buildings and in nearby contractor's offices Rotarians have a hand in nearly every step of the action: Joseph Kratovil, as Chief of the MSC Resources Management Division, is responsible for budgeting and monitoring the spending of MSC funds. Colin Harrison represents the Martin Company, which manufactures the Titan II rocket booster used in the current Gemini flights. Bernard "Larry" Sarahan is the chief of 600 International Business Machines Corporation people who man the acres of computers that "fly" future missions before any man need leave the ground. Frank G. Morgan, Jr., is

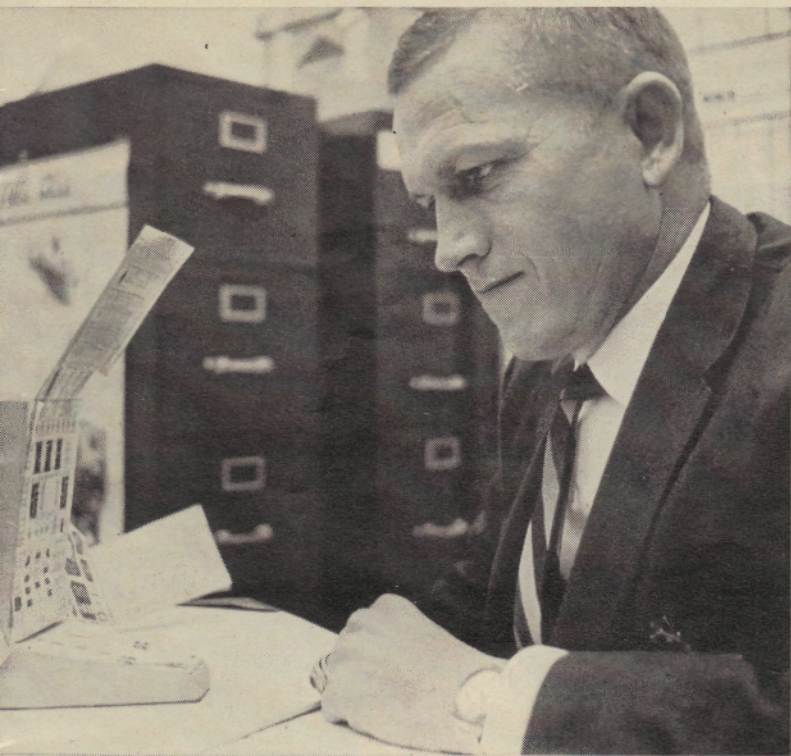
McDonnell Aircraft's man at MSC—it supplied the capsules for the Gemini and Mercury flights. Among these Rotarians and dozens more are two men who ride the capsules into space—L. Gordon Cooper and Frank Borman. Both began their memberships as active members, but when flight training made their attendance at meetings sporadic, the Club made both Honorary members—not because of their achievements, but because of their desire to be a part of the Club's service to the community. Frank Borman, who lives with his wife and two sons in nearby El Lago, said, "I wanted to become a member because I'm very much interested in the community around here. I think a Rotary Club is an important asset to housing developments like these."—a pretty down-to-earth statement from a man, who, with James Lovell, holds the current world's record for time in space, set in the Gemini 7 which rises from the cover of this issue of THE ROTARIAN.

There are many such flights to come before the "big one." The two-man Gemini series is now merging with the Apollo flights. When the towering Saturn-Apollo lifts off for the moon perhaps there will be a Rotarian among its three-man crew. If not then, it seems certain that some Frank Borman or L. Gordon Cooper will some day walk another planet, perhaps one outside our solar system. When he does, Rotary will walk with him. Rotary Universal, anyone?



Like members of every Rotary Club, Space Center Rotarians represent a cross-section of their community's business life. Here are some of them in action (clockwise from left): Roy Iles, real estate broker, plants his firm's sign at a newly built home. . . . Veterinarian Karl Wallace examines a cat owned by one of the astronauts. . . . Beverly E. Steadman shows a model of an airplane built by his company—the Lockheed Aircraft Corporation. . . . J. A. Newborn examines one step in the production of his Suburban Journal. . . . Assistant School Superintendent Clyde M. Mason adds a map pin representing a new pupil in his growing Clear Creek School District.

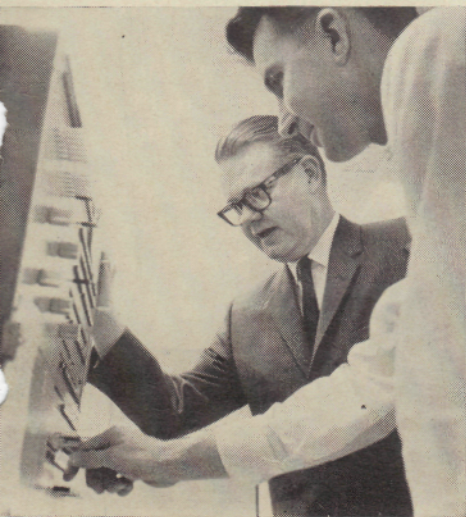




If you've ever thought of astronauts as daredevils who hop into their ships and blast off for the beyond, Frank Borman (above) and L. Gordon Cooper will be glad to set you straight. For every hour these two Rotarians have spent in space they've spent hundreds of hours in classes and in training exercises. There's a tough, exacting trade that calls for more brains than bravado, more effort than ease, more dedication than daring.



When Rotary meets at Space Center, baseball and current events have to share the conversational stage with thrusters and zero-"g" maneuvering. . . . At left, Club President Ivan Brown clears the board of earth-bound matters at the meeting's "president's time."



More Rotarians on the job (clockwise from left): Bernard L. Sarahan (wearing glasses), International Business Machines manager, confers with the operator of a computer testing flight plans. . . . John Brinkman, Chief, MSC Photographic Technology Laboratory, checks just-processed motion picture film. . . . Frank G. Morgan Jr., works at his desk in the Space Center office of the McDonnell Aircraft Corporation—space capsule manufacturers. . . . Joseph Kratovil, Chief, MSC Resources Management Division, tackles problems of budgeting space funds. . . . Philip T. Hamburger, a long-time Rotarian and member of the Rotary Club of Houston, is MSC Director R.R. Gilruth's assistant for congressional relations.



THE PLAN FOR SATURN-APOLLO

INJECTION INTO MOON TRAJECTORY;
CONNECTION OF COMMAND AND SERVICE
MODULES TO LEM; JETTISON THIRD STAGE

THIRD STAGE AND APOLLO
SPACE CRAFT ENTER
EARTH ORBIT

JETTISON SECOND STAGE

JETTISON ESCAPE TOWER

SECOND STAGE IGNITION

JETTISON FIRST STAGE

LAUNCH

LAUNCH FROM EARTH

LUNAR ARRIVAL

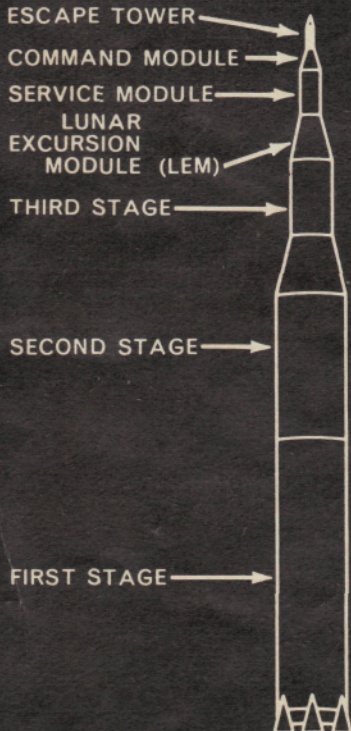
ROTATE TO
TAIL FORWARD
POSITION

RETRO FIRE
SLOWS APOLLO
SPACE CRAFT
FOR ENTRY
INTO LUNAR ORBIT

MOON

LEM
SEPARATES,
DESCENDS
TO MOON

COMMAND AND
SERVICE MODULES
STAY IN ORBIT



Sometime before the end of the 1960s—perhaps as soon as 1968—the 364-foot tall Saturn-Apollo space vehicle, rising on a plume of brilliant flame from Merritt Island, Florida, will boost three U. S. astronauts into an Earth orbit and then into a trajectory for the moon.

Although only one of the three will ultimately walk on the moon, all are necessary to the success of the mission. One man will remain with the Apollo command and service module in a parking orbit 90 miles above the moon while his companions descend to the surface in the lunar excursion module. One of these two will tend the LEM as his partner, wearing a protective covering over his flight suit (see illustration, right), steps onto the lunar surface to spend an Earth-day or more exploring, photographing, and collecting samples.

Of seven Saturn-Apollo units that will leave the Earth only one—the command capsule carrying its men and their discoveries—will return. Its blazing re-entry to Earth's atmosphere will mark the beginning of man's mastery of interplanetary space.

