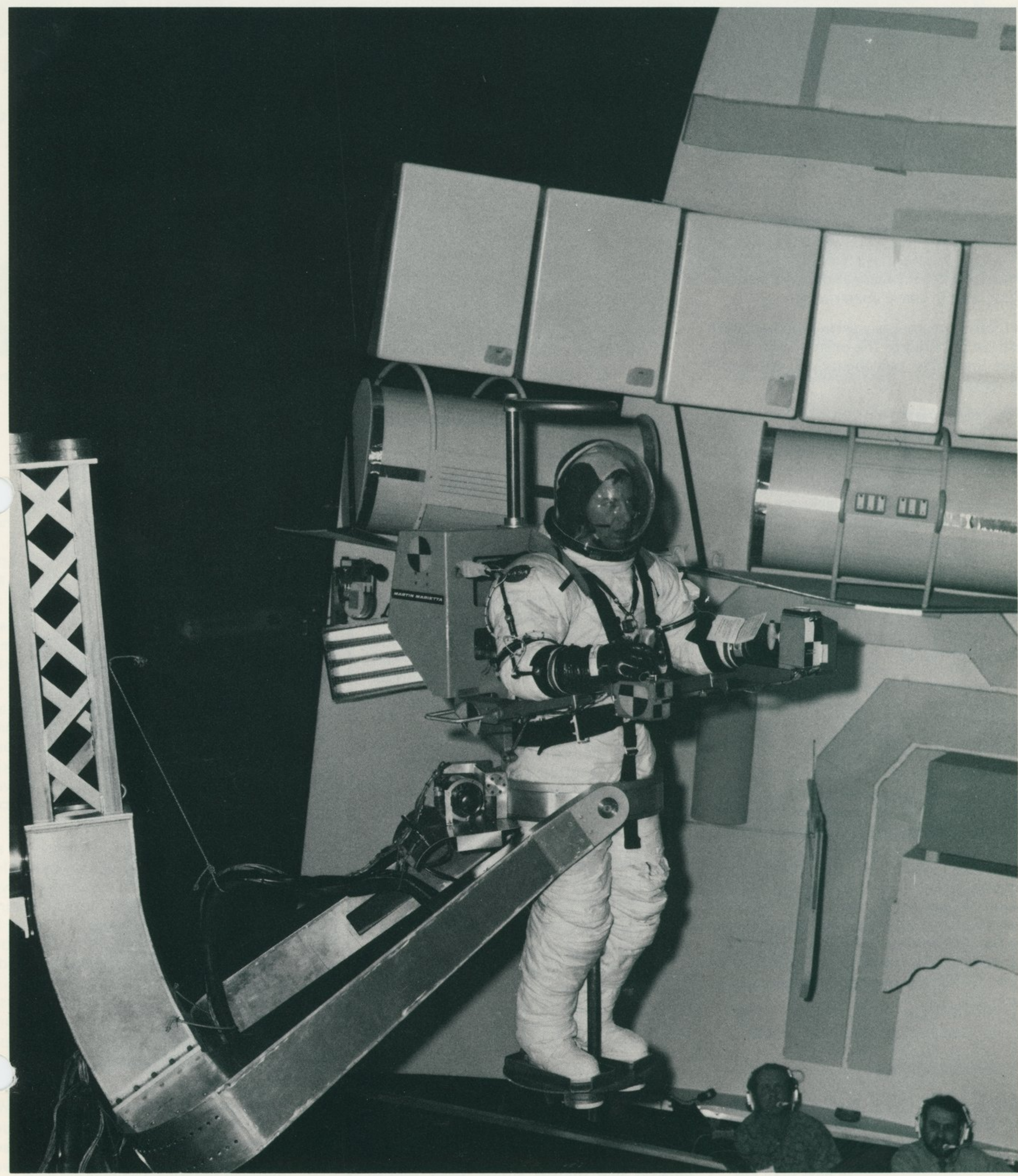


MARTIN MARIETTA

news

DENVER DIVISION

NUMBER 14/1979



Manned maneuvering unit development is accelerating

The Denver Division is accelerating development of the first backpack manned maneuvering unit to be used by an astronaut outside an orbiting spacecraft. Stepped-up efforts were authorized by NASA to prepare the unit for an early Space Shuttle mission.

As an example of a science fiction story fulfilled in real life, NASA's Shuttle astronauts will use the backpack to circle and inspect the airplane-like orbiter while in space.

Astronauts wearing the maneuvering unit also will be able to perform a variety of activities outside the spacecraft that will require the personal attention of an astronaut. The activities would include rescue operations, spacecraft servicing and repair, cargo transfer, small satellite retrieval, science investigations and observations, and in-space construction.

Initially, astronauts wearing the backpack will be tethered to the orbiter with a 120-foot line. After test flights, the tether will be removed.

The maneuvering unit will be 49 inches tall, 32 inches wide, and 26 inches deep. It will weigh about 260 pounds when fully loaded with propellant.

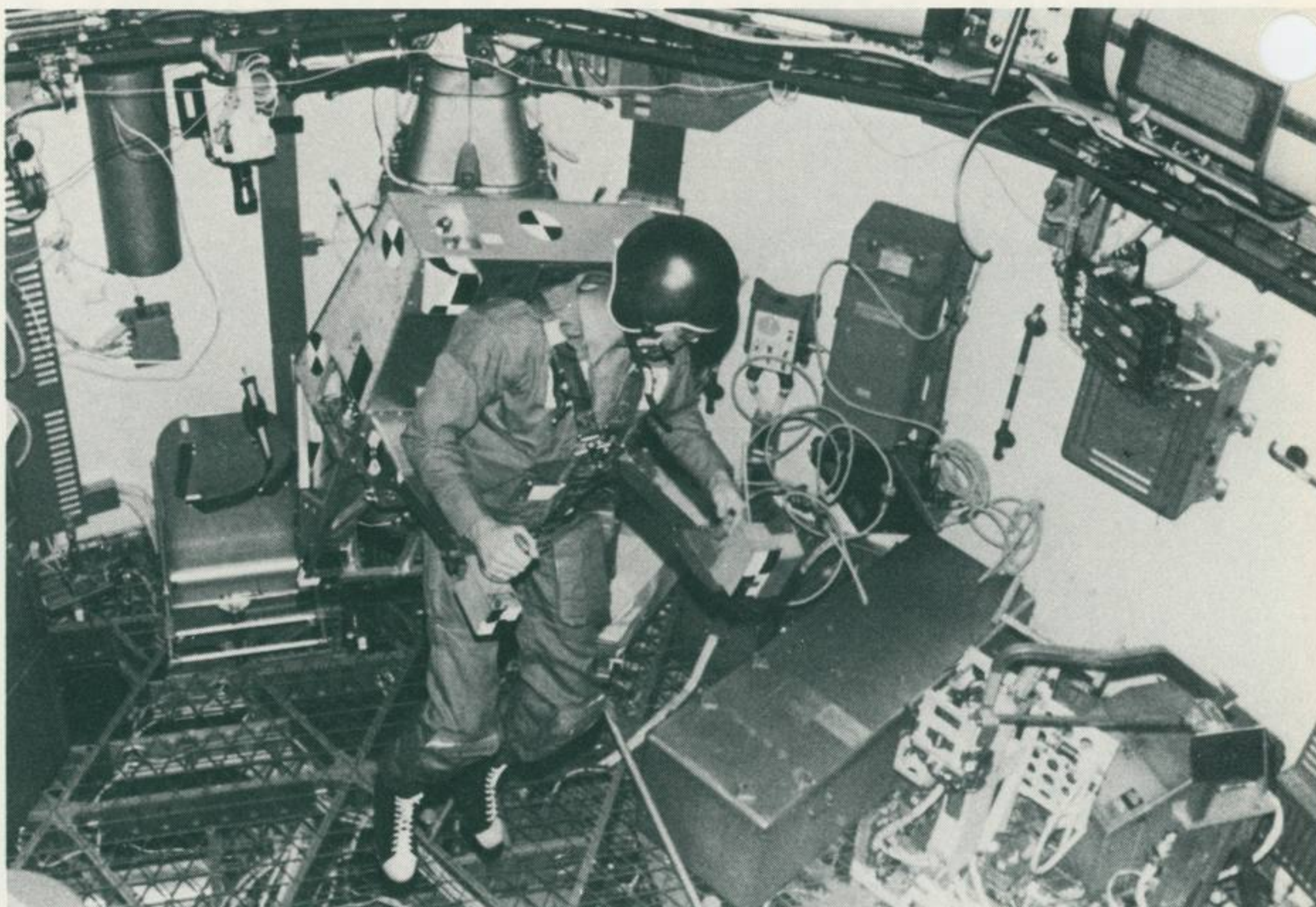
The aluminum-shelled backpack will include a silver-zinc battery, a control electronics assembly, two hand controllers, and a cold gas nitrogen propulsion system. The propulsion system will consist of two 30-inch long, 10-inch diameter propellant tanks and 24 small thrusters. Each of the thrusters will produce 1.4 pounds of thrust.

To maneuver in space, an astronaut merely moves the hand controls. The control electronics assembly will translate the hand control movements and fire the thrusters.

The Denver Division has been involved in the development of backpack maneuvering units for several years and its experimental gas-jet maneuvering backpack, called the M509, was successfully test flown by five astronauts inside the Skylab space station in 1973 and 1974. The division analyzed the mass of data produced by the M509 experiments. The firm also has been under contract to NASA since April 1975 to update and modify the backpack.

On the cover

Skylab astronaut Paul J. Weitz trained on the astronaut maneuvering unit simulator before he and other astronauts tested a backpack maneuvering unit, called the M509, inside the Skylab space station.



Inside the orbiting Skylab space station, astronaut Alan Bean flew the M509 backpack maneuvering unit. Bean and other astronauts tested the M509 inside Skylab in 1973 and 1974.

Two new manuals available in library

A completely new *Supervisors' Handbook* is available in the library for supervisors who have not yet obtained their copies.

In addition to being more comprehensive than the previous manual, it features a 25-page index that cites applicable policies and standard procedures as well as page references in the *Supervisors' Handbook and Employees' Guide to the Denver Division*. Photographs throughout the manual show some of Martin Marietta's contributions to aviation and aerospace from 1909 to 1979.

A revised manual of *Style for Reports and Proposals* is also available. It too is more comprehensive than the previous manual.

Material on style is presented in alphabetical order, and there is a complete index. Appendixes provide guidance on formats, word usage, SI units and abbreviations, as well as the use of the storyboard technique for preparing documents.

Copies of the style manual are available in the library, but, if you want to be on the distribution list for revisions, call Newt Hubbs, ext 5277, for a copy.

Food services announces changes

"The division cafeterias, dining room, vending services are planned as a non-profit, breakeven enterprise," says A. E. Hawkins, vice president business operations. "But we cannot lose money and we are approaching that condition."

The costs to operate division food services has increased 14%, while cafeteria prices have been raised on the average only 7 to 8%.

"With our costs changing continually and unpredictably, we are going to make more frequent cost/income comparisons," said Hawkins. "We will be making frequent, minor downward or upward price adjustments to keep pace with cost changes."

On the more welcome side, changes are being made in vending service that effectively reduce the prices of vended beverages. New hot and cold drink machines are on hand to replace existing units. Installation will be made during November. The new machines are capable of dispensing larger portions. As they are installed, cold beverages will be dispensed in 12-ounce servings and hot beverages will be 8¼ ounces. The new sizes represent increases of 33 and 18%, respectively at no increase in price.

New machines will be installed in all present areas except DSC and SSB ground floor. Machines in those areas are already capable of dispensing the larger sizes and will be adjusted to do so in November.

Insurance plan pays costs of second opinion

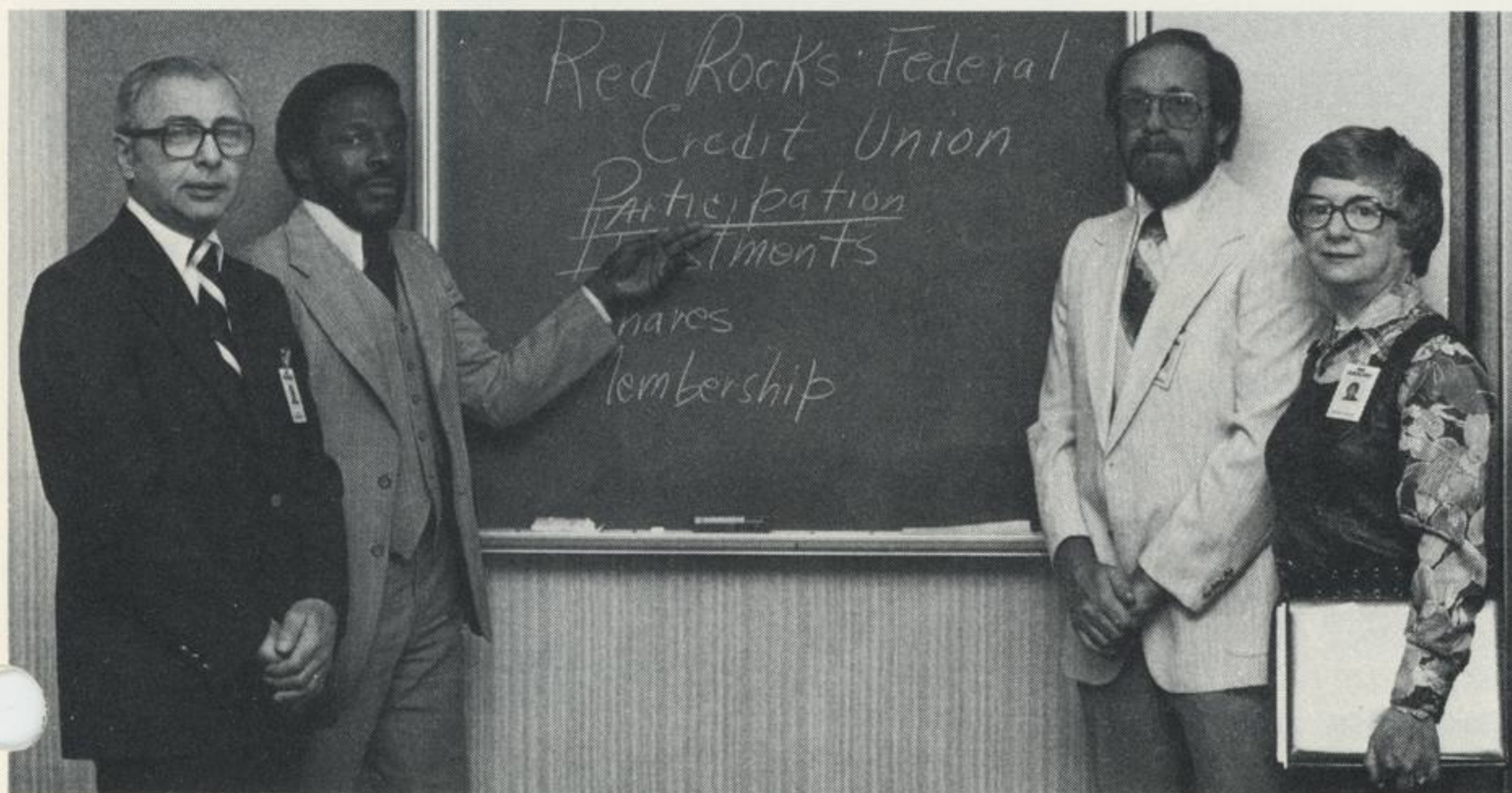
Martin Marietta's medical plan provides full payment for a second surgical opinion when elective, nonemergency surgery is recommended for an employee or for an insured dependent.

"Your peace of mind is the most important reason for obtaining a second opinion" Dominic N. Verrastro, manager of employee and labor relations said. "A second opinion consultation with another surgeon may confirm that surgery is the most appropriate treatment for the medical condition. Or, while one surgeon may recommend surgery, another may suggest postponing that operation in favor of alternative, nonsurgical treatment. With a second opinion, you may be able to make a more informed decision as to whether to have surgery."

The Connecticut General group medical insurance plan includes 100% coverage of reasonable and customary charges for the consultation and any related laboratory tests or x-rays. Regardless of the outcome—even if the consulting surgeon recommends against surgery and you have it anyway—your medical benefits are not affected. The consultation is covered, and the plan still pays the usual benefits for the operation.

It is easy to get a second opinion. If you like, Connecticut General will give you names of consulting surgeons and even make an appointment for the with the surgeon of your choice. Call the second opinion program coordinator in Connecticut General's Denver claim office, 321-5577.

Copies of the brochure describing the program are available from the division insurance office, engineering 125, or call extension 3009.



Officers of the employee-operated credit union being formed at the Denver Division are shown at a recent meeting at which Red Rocks Federal Credit Union was chosen as the name of the organization. Left to right are Fred R. Bennett Jr., secretary; John J. Smith, president; Robert L. Gale, vice president; and Dorthea E. Gibson, vice president.

Car pool program continues growth

The division's car pool program continues to grow with more than 2000 employees participating.

Additional car pools may be formed at anytime and individuals may still request computer-matching information. Applications may be obtained from the share-the-ride office, engineering building 125.

In a recent letter, Elaine Good, rideshare coordinator for the Denver Regional Council of Governments (DRCOG), said, "We applaud your efforts and congratulate your organization for the ridesharing success you have accomplished."

The division uses DRCOG computer facilities to match riders and drivers by home address, work location, and work hours.

Two elected to board of directors

Griffin B. Bell and Charles E. Hugel have been elected to the Martin Marietta Corporation's board of directors.

Bell, former Attorney General of the United States, is a senior partner in the law firm of King & Spalding at Atlanta and Washington. Hugel is an executive vice president of AT&T and has 27 years of service as an executive in the Bell System.

With the election of Bell and Hugel, the Martin Marietta Corporation board has 13 members, 11 of whom are "outside" or independent directors.

Personal growth workshops expanded

Two-day workshops in managing personal growth, formerly called personal growth management, continue to provide employees the tools to make self-development a reality.

Some 800 employees, from directors to secretaries, have participated in the workshops since their inception in 1977.

Designed to broaden the participants' perspective of what their jobs are all about, the workshops help the participants use their work to achieve personal growth.

The increasing requests for attendance in the workshops have led to the training of an additional leader, Joseph Neri Jr., a group engineer in quality engineering. With this addition, the workshops are being conducted four times a month instead of semimonthly.

Workshops are open to all nonexempt and exempt salaried employees, providing their schedules can be arranged to attend the two-day sessions.

Employees interested in attending a workshop should make requests through their supervisors.

Questions concerning the managing personal growth workshops should be directed to the training, education, and employee development office, extension 5226.

Red Rocks chosen as credit union name

Red Rocks Federal Credit Union has been chosen as the name for the employee credit union at the Denver Division. The name will become official upon acceptance of the charter by the National Credit Union Administration, an agency of the federal government, and clearance by the Colorado Credit Union League.

Officers of the newly formed credit union expect to announce the location of a temporary office for the credit union in mid to late November. At that time employees will be told when and how to apply for membership.

Officers of the organization are John J. Smith, president; Dorthea E. Gibson, vice president; Robert L. Gale, treasurer; and Fred R. Bennett Jr., secretary. Board members are Bruce Benigno, A. Wayne Bodkin, Kenn M. Byers, Nicholas Ganiaris, Marie Heidbreder, Charles H. Smith, and Lloyd Trujillo.



A Martin Marietta Corporation check for \$8500 is presented by J. A. Beacon, left, representing the division, to Dennis O'Malley, center, Craig Hospital administration. At right is C. B. Hurtt, division vice president and general manager. The grant will be used to purchase specialized equipment for the hospital.

Corporate gifts aid Denver organizations

The Denver Division, through the corporate committee on gifts and grants, has donated \$106,350 to various organizations in metropolitan Denver.

Among the organizations are Mile High United Way, Metropolitan Science Center, Childrens Hospital, Littleton Center for Cultural Arts, and Brothers Redevelopment.

Special grants have been made to the Denver Symphony, Loretto Heights College, Arapahoe Community College Foundation, and Craig Hospital.

The most recent grant, for \$8500, was to Craig Hospital. The 80-bed general hospital specializes in the rehabilitation of the catastrophically injured, specifically spinal cord and traumatic brain injuries.

J. A. Beacon, division manager of application software design and development, severely injured in an auto accident in 1978, is an example of treatment provided at Craig. Through his own determination and the hospital's treatment, he is walking with the aid of braces. When his treatment began, it was predicted he would never walk, but spend the remainder of his life in a wheelchair.

Craig will use the funds to purchase three items: A new prototype of a Stryker frame used in the stabilization of spinal injuries and certain associated medical complications; a Stroke Egerton bed that

shifts a patient's weight to avoid ulcers that can occur when too much pressure is exerted on a paralyzed area; and an electronic communication device that permits brain injured patients who have lost the ability to speak intelligibly to rapidly select words, expressions, and letters to communicate with others.

Recreation

Pool Tournament—The first annual Martin Marietta pool tournament will begin in November. It will be two tournaments in one, with participants eligible to enter either an eight-ball tournament or a straight pool tournament on both. Trophies will be awarded in each section of the tournament. The double elimination format give participants one week to meet and play their rounds. Deadline for all entries is November 2. Tournament play must be completed before the Christmas break. To enter or to obtain more information, call David Goodrich, extension 4768, or Jarrett Peter, extension 7660. Entry blanks may be picked up at the recreation office or from the reading racks.

Satellite Ski Club—Satellite Ski

Entry deadline set for publication awards

The publications award committee has set January 18, 1980 as the entry deadline for evaluation in the division's award program. Eligible papers may be submitted anytime up to the deadline.

Entries should be submitted in ten legible copies and be accompanied by a completed publication award entry form. Forms and information may be obtained from R. W. Walker, training, education, and employee development, extension 3395, mail no. S6360 (SSB 409).

To be eligible for an award, the article must have been published between January 1, 1979 and December 31, 1979. Signed articles appearing in professional, technical, or trade periodicals; journals, papers, or bound proceedings may be submitted. Articles should be related to the author's professional function in his assigned duties.

Entries will be evaluated on creativity, quality of content, benefit to the company, and mode of expression.

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Denver Division
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Club meetings are held the second Wednesday of each month at the Kimberley Village Apartments clubhouse, 1801 East Girard. For more information, call Dennis Cassar, extension 5181.

Disco Dance—Disco dance classes will begin Thursday, October 30, and will be held from 7:30 to 9:00 pm in the DSC lobby. Cost is \$15 for the six-week course. Checks (payable to Gail Andresen) and registration forms must be turned in to the recreation office by October 26.

Discounts—The recreation office has discount offers for entertainment, travel, and some merchandise. Information may be obtained from the office or from the reading racks.

At Canaveral

Two cited for performance

Two Canaveral operations employees have been presented employee commendations for alertness and professional performance. Receiving commendations were James M. Peters and Roger A. Barickman.

Peters, a technician-mechanical, was assigned as platform operator during a platform closeout operation. During the operation, the platform started moving toward the vehicle because of a malfunction when the lower leaf button was depressed. Peters removed his finger, but the platform continued to move. He quickly shut off power to the platform, stopping the movement. His action took less than the eight seconds required for the platform to reach its fullest extended position. His alertness, knowledge of operations, and quickness prevented damage to the launch vehicle.

During a routine disassembly, cleaning, and repair of the helium system quick disconnect, Barickman, a technician in the hydraulic and cleaning lab, discovered about 80% of an internal O-ring missing and the remaining portion appeared damaged. His alertness led to an investigation of past uses of the quick disconnect and for possible contamination of the system. A small part of the O-ring was found in a filter. Barickman's alertness may have prevented contamination of the airborne helium system.



Felix J. Scheffler, left, director of Canaveral operations, presents a Martin Marietta Corporation check for \$3000 to H. J. Underhill, administrator of the James E. Holmes Regional Medical Center. The corporate donation will help fund the hospital's expansion program.

At Michoud



Production readiness under way at Michoud

In the fall of 1983, Michoud operations will be producing approximately 24 external tanks a year, according to Richard R. Foll, production engineering manager.

"To accomplish our increased production goal," Foll said, "we need to provide all the tooling, facilities, and support functions necessary to go from a development program to a rate production capability."

A study committee recently completed an extensive production readiness plan that covers the many details necessary to complete preparations for the increase in production.

The experience gained during the development phase of the tank assembly program provided the baseline for developing the production plan.

New facilities and tooling are being activated to support production, with the major additions in thermal protection system application. The present method of bonding prefabricated ablator panels onto the tank structure will be replaced by spray ablator application performed in cells designed for that purpose.

Existing facilities for spraying foam insulation onto tank structures are being expanded to support the higher production rates. An additional final assembly position and one new test and checkout cell will be brought on line.

In addition to the added facilities and tooling, mechanized support systems are being developed to handle the volume of paperwork associated with the increased production rates. A computer-based integrated parts status system will provide

Michoud food drive is successful

Recently Martin Marietta joined NASA and other tenants at Michoud in a drive to support the New Orleans community food distribution center by collecting canned and nonperishable food packages. The goal was for each individual to bring one food item.

Martin Marietta employees exceeded the goal by about 24% while other organizations reported at least 100% of the goal. The items collected were sent to the distribution center where they will be used to supply food in emergency situations for persons affected by floods, hurricanes, and other natural disasters.

Department representatives for the drive were Barbara Lombard, executive area; Ray Lacombe, industrial relations; Joe Marshall, finance; Marie Troullier, contracts; Sherri Robertson, planning; Fay Guggenheim, computer services; Shirley Kirk, engineering; Janet Alvarez, production operations; Clo Johnson, quality; Augie Mahon, facilities; Dawn Leggio, materiel; and Mike O'Hern, company representative to the NASA committee.

real-time information on hardware status and configuration and will be used to collect costs and measure performance.

The computer-aided planning system that is being developed will improve the quality and timeliness of the process plans used to build external tank hardware.

"At this point, I feel we've looked at every avenue possible to ready Michoud for a higher production rate in a few years," Foll said. "We're all anxious to move to the next step."

At Michoud

Michoud operations plans move to newer facilities

Some 755 Martin Marietta employees are moving to a newer, more functional building at Michoud to obtain more efficient working space and to reduce energy costs.

Facilities manager Randy Tassin explained that buildings currently occupied were built in the 1940s without energy saving plans in mind.

"The present buildings are long and narrow. This makes providing efficient workspace difficult and involves high maintenance costs," Tassin said. "It takes considerably more energy to heat and cool these buildings than the newer, square-shaped building we'll occupy."

Employees will occupy approximately one-fourth of a newer, 15-year-old, two-story, square building of 500,000 square feet located about 1000 feet from existing accommodations. The move will be in three steps, beginning in late November.

The move will involve all employees except those closely tied to work in the factory who would benefit from remaining in that area. These departments include production operations, facilities, and tooling.

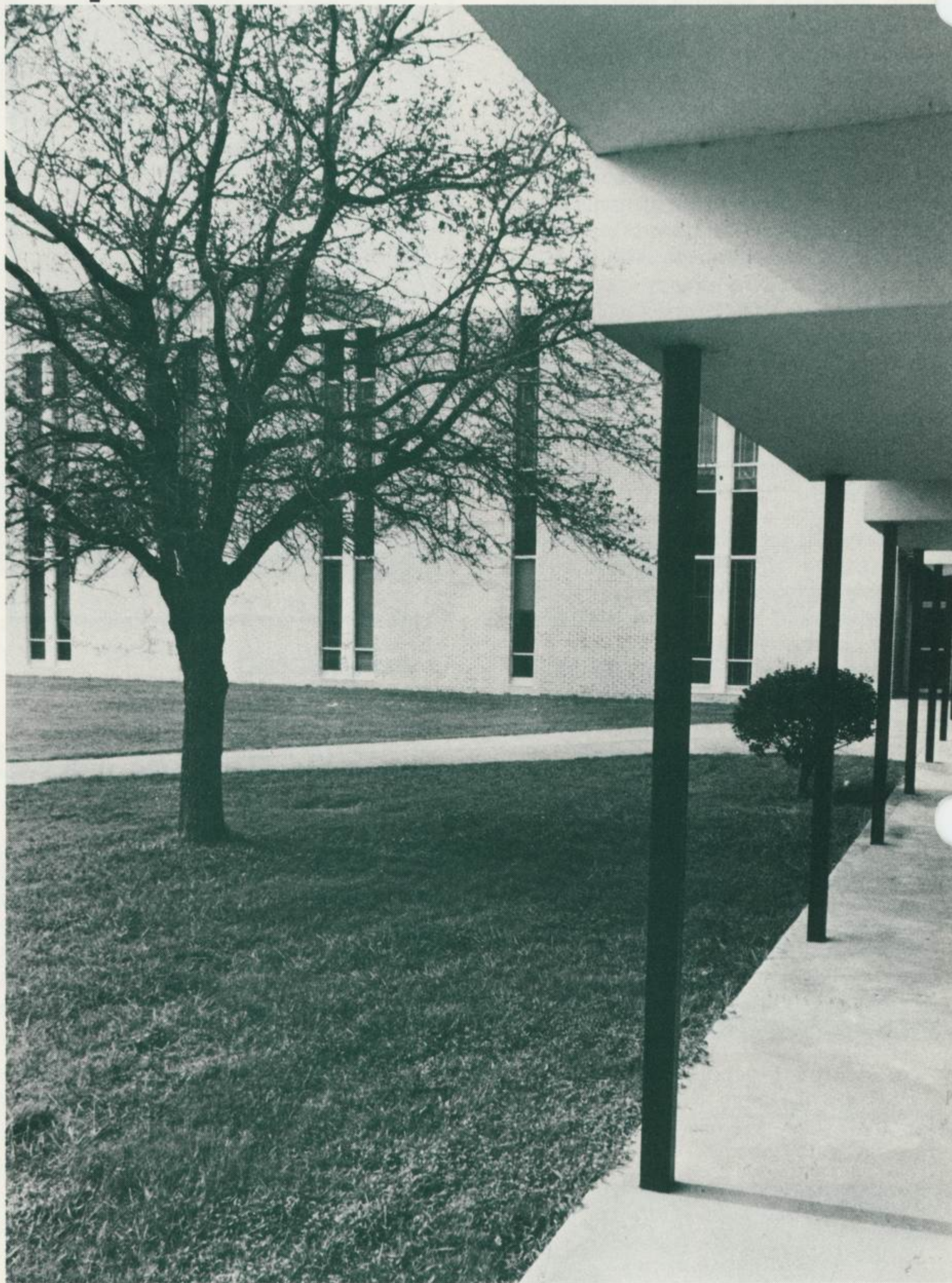
Preparations for the first step of the move have been completed. Electrical outlets and telephones are installed, partitions are in place; only carpet needs to be installed before the move.

The first group of 162 employees are from the materiel, professional and industrial relations, and a portion of product assurance departments. They will occupy 20,000 square feet.

The second step is scheduled to begin in mid-1980. Nearly 400 people in engineering and computer services will relocate, occupying 50,000 square feet.

The final step, involving 193 employees, will take place at the end of 1980. Those included will be from the executive areas, contracts, planning, and finance organizations and the remainder of the product assurance department employees. Nearly 40,000 square feet will be taken over then.

NASA, through a facility operator contractor, will spend \$500,000 in construction funds to upgrade the new location. A decorating firm was commissioned to create a pleasant and spacious working environment. Martin Marietta has allocated \$200,000 for furniture refurbishing and partitions, making total expenses for the move \$700,000.



Entrance to newer building to be occupied at Michoud.

"Even with the outlay of funds for the move, we will end up saving money in the long range," Tassin explained. "Our maintenance and energy costs will be considerably less and realized right away."

The present administration building eventually will be destroyed because it would be cheaper to rebuild with energy-saving designs in mind rather than attempt to modify the outdated building. The other building now occupied will house a small portion of factory-related employees.

Plans call for a shuttle system to transport employees between their new loca-

tion and factory operations. Additional bicycles and a covered walkway are being considered to aid employees in movement between the two locations.

Michoud United Way campaign successful

The Michoud operations employee campaign for United Way of New Orleans has been successful, with \$62,000 in pledges and 95% of the employees participating.

In addition, more than \$14,000 was pledged by Michoud operations employees in Mississippi, Alabama, and Florida.