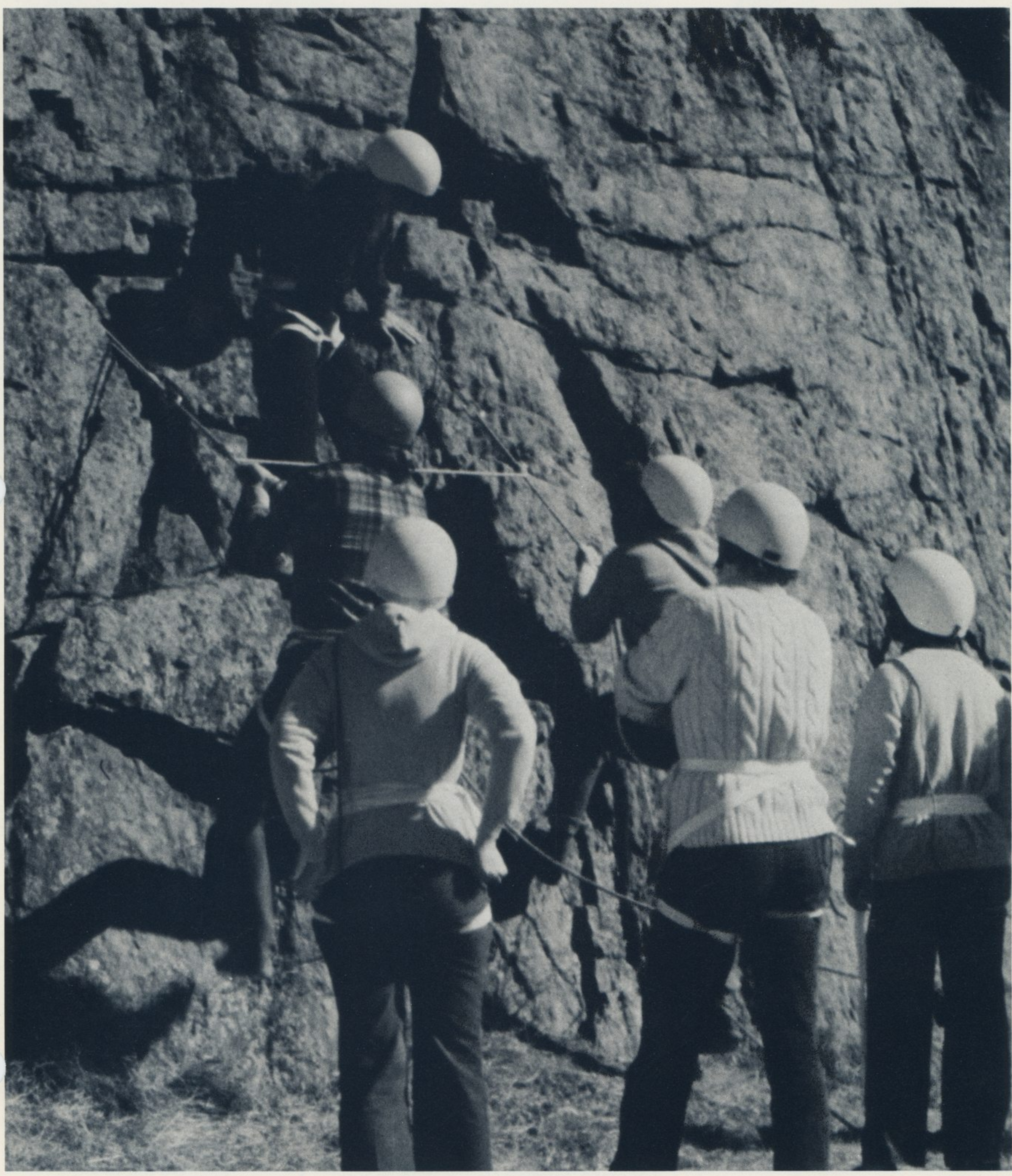


NUMBER 15/1979



# 45 employees combine Outward Bound, growth workshops

To improve the managing personal growth workshops, the division recently combined a growth workshop with a weekend Colorado Outward Bound program for 45 employees.

"We have found that 25 percent of those participating in the workshops had significant changes in their careers," Roy Yamahiro, manager of training, education, and employee development, said. "Others had changes of lesser degree. Although the 25 percent exceeds our goal of 10 percent, we continue to search for ways of improving."

"We are conducting an experiment to see if the combination would significantly change more of those participating."

A difficulty experienced by many in the workshops was one of taking risks and accepting alternative ways of doing things in their jobs and their careers. The Outward Bound program attempts to show the value of risk taking and the importance of trying new things.

"It seemed to us that the fundamental philosophy of Outward Bound met what we saw as a need in the managing personal growth program," said Yamahiro. "We designed a weekend program that combined the best elements of each of our programs."

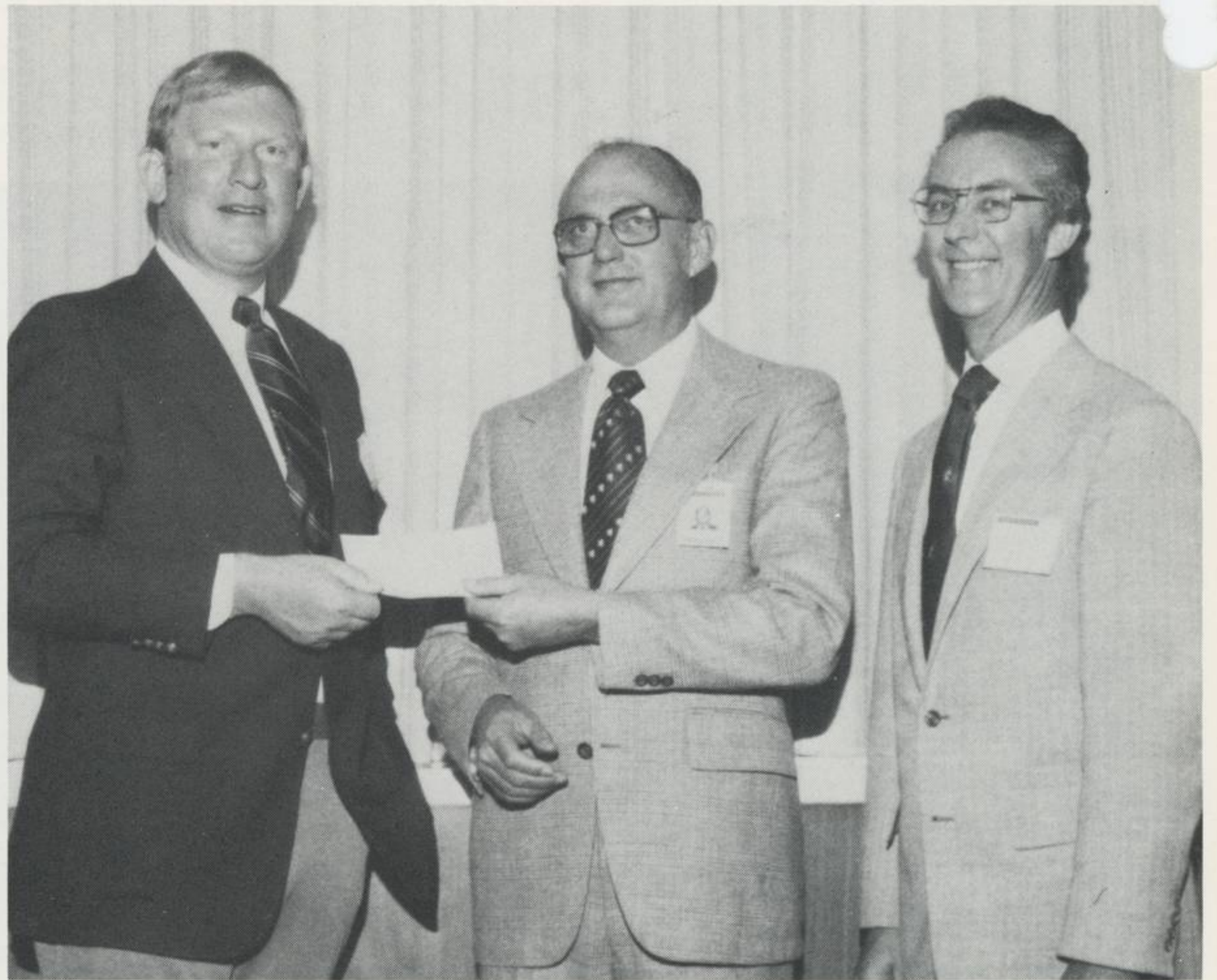
"We had three groups," said Yamahiro. "One made up of employees who had been significantly changed by a growth workshop, another whose change had been less, and a third new to the program."

The combined program, held at Outward Bound's mountain base camp near Leadville, is being evaluated. Initial reactions indicate that for almost all, individual experiences met the expectations of challenge, accomplishment, team work, and an emotional sharing not often accomplished in such a short course.

Joseph Neri conducted the managing personal growth workshop for those who had never attended. Yamahiro lead sessions for those who had attended earlier two-day workshops.

Those participating were Norman L. Arbon, Thomas J. Baillargeon, Stanley Barrett, David J. Boyle, Aubrey D. Bungler, Jackie O. Bungler, Judith L. Cacco, Michelle L. Childers, Jerry L. Compton, Joyce E. Dame, Roy A. Diaz, Marjorie L. Durland, Leo R. Fondacaro, Dorothea E. Gibson, Thomas E. Godwin, David N. Grover, Clifford A. Hartman, Phillip R. Horkin, Donald I. Kalstein, James J. Kehoe Jr., Rainer H. Koenig.

George W. Laws, Alice M. Lazalde, Walter F. Livezey, Charles F. Melle, Jennifer L. Milillo, Arnie I. Neiss, Albert G. Nemes, Alex R. O'Connell, John W. Phelps, Ronald E. Pittman, Janice E. Redfield, Thomas C. Redfield, Judy D. Ridgeway, Thomas C. Shupert, Elvis D. Simon, Patsy J. Slovikoski, Ronald D. Slovikoski, William A. Steffen, Richard J. Stoner Jr., Joseph M. Toth Jr., G. J. Vigil, John F. Winterbottom.



R. E. Burnett, center, director of professional and industrial relations, presents a Martin Marietta check for \$38,500 to P. K. Ware, left, volunteer vice chairman of the 1980 Mile High United Way campaign. At right, Donald D. Hoffman, president of Mile High United Way. The presentation was made during a breakfast meeting. Employee gifts brought the total contribution to more than \$240,000.

## Scholarship application deadline is February 15

Application deadline for Martin Marietta Foundation scholarships for sons or daughters of employees is February 15, 1980. The scholarships are for the 1980-81 academic year.

To be eligible, the employee whose son or daughter is an applicant, should be a Martin Marietta employee at least two years as of January 1 of the award year and on the active payroll at the time of the award.

Applications for the \$2000 scholarship will be evaluated and winners selected by a committee of three persons not associated with the company. The committee will be chosen by trustees of the foundation from the academic and business community. All applications, supporting evidence, and correspondence should be sent directly to The Scholarship Selection Committee, Martin Marietta Corporation Foundation, 6801 Rockledge Dr., Bethesda, MD 20034.

Application forms and information about the scholarship program may be obtained from R. W. Walker, SSB 409, extension 3395 in Denver, or from Ray Lacombe, extension 3606, in Michoud.

## United Way drive is completed

Employees have pledged \$202,233 to the Mile High United Way for support of its agency members in 1980. More than 91 percent of the employees made pledges or cash contributions.

The Martin Marietta corporate gift was \$38,500.

Employees in Canaveral, Michoud, Vandenberg and the division's other off-site locations will contribute \$235,281 to United Way organizations in their areas in 1980. Participation was more than 90 percent in these areas.

## On the cover

Employees scale a rock as part of combined managing personal growth workshop and weekend Outward Bound program.

### MARTIN MARIETTA NEWS

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Denver Division

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November 1979

## Martin Marietta earnings increase in third quarter

Martin Marietta Corporation's third quarter net earnings increased to \$54,077,000, or \$2.16 per common share. In the corresponding period of 1978, earnings were \$44,722,000, equivalent to \$1.81 per share (or \$1.72 assuming full dilution resulting from convertible debentures that are no longer outstanding.)

Third quarter sales increased by nearly \$74 million, from \$456,746,000 in 1978 to \$530,353,000 in the three months just past.

For the first three quarters of this year, Martin Marietta net earnings were \$140,698,000, or \$5.60 per share, on sales of \$1,491,413,000. At the comparable point in 1978, earnings were \$99,373,000, or \$4.10 per share, and sales were \$1,251,113,000.

Martin Marietta earned \$136 million, or \$5.54 a share in 1978, and \$102 million, or \$4.29 per share, in 1977, each year in its turn being a record.

## Credit union names committees, sets office location

The Red Rocks Federal Credit Union, the newly-formed, employee-operated credit union for Denver Division employees, has named members to three key committees for the organization.

Officers also announced that the office for the credit union will be in engineering building 240 (part of the former second floor cafeteria).

Committees and their members:

**Supervisory:** Wilber W. Benham, chairman; Henry J. Esser, and Howard C. Delcher.

**Credit:** Marilyn K. Cleveland, chairman; Charles H. Green Jr., Jeffery A. Kildow, and Ronald E. Pittman.

**Education:** William L. Miller, chairman; Leroy Hollins, vice chairman; Janet White, recording secretary; Robert T. Killian, Lila L. Notz, Raymond F. Powers, Eric W. Johnson, and Leon F. Loiselle.

## College matching gift program is improved

Martin Marietta Corporation has liberalized its program for matching employee cash gifts to colleges and universities.

For each dollar an employee gives to a qualifying school, the corporation will match it with two dollars. Formerly, the program matched gifts dollar for dollar. The matching gift program began in 1968.

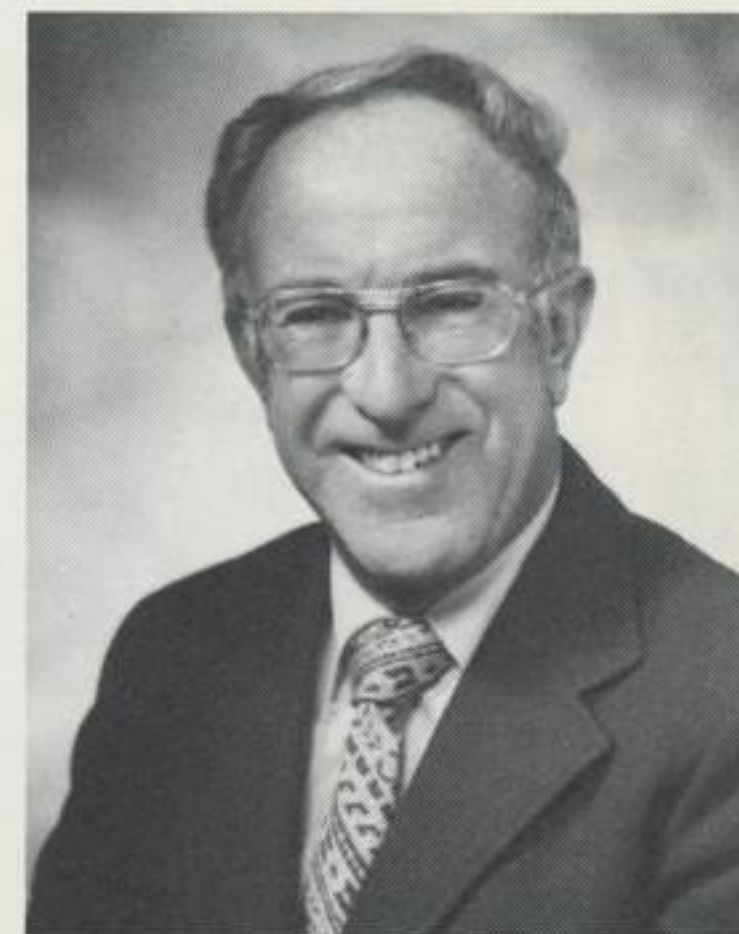
The maximum gift by an individual to any one accredited institution has been raised from \$1,000 to \$2,000 per year.



Morgenthaler



Leithauser



LeVine

## Corporate executives are promoted

Several top-level promotions in the corporate and operating executive staffs have been made by Martin Marietta's board of directors.

## CU masters degree program to continue

The University of Colorado program leading to a masters degree in aerospace engineering will continue in the 1980 spring semester with at least one course.

To be offered is ME522, methods of engineering analysis II. Aerospace 606, advanced space flight dynamics, will be offered if 20 or more employees enroll in the course.

Other courses will be offered at the CU Boulder campus in early morning and late afternoon to accommodate employee work schedules. A list of on-campus courses is available from Bette Wooster, engineering building 240 (former second floor cafeteria), extension 5698.

In other division-sponsored education programs, 22 employees are enrolled in eight courses in the Colorado State University Research in Graduate Education (SURGE) and 437 are enrolled in the 23 courses in the evening education program.

In addition, 145 employees are attending most of the area's centers of higher learning under the company's tuition reimbursement program.

J. Donald Rauth, chairman and chief executive, said, "In a few instances these changes represent advance preparation for the retirement of some key executives, and in all cases they are taken to assure reinforcement of and continuity of strong executive management in the years ahead, which we are confident will be a period of healthy growth and expansion for Martin Marietta."

David S. LeVine, 55, a corporate vice president who also has served as president of Martin Marietta Cement, becomes senior vice president, operations. Presidents of the various Martin Marietta entities will report to him on day-to-day operational matters. LeVine formerly was vice president for launch vehicles at the Denver Division.

Charles H. Leithauser, 54, becomes senior vice president and chief financial officer. He retains the responsibility he had for financial functions as a corporate vice president. Industrial relations and other administrative elements in the headquarters organization will be added to the functional group he will direct.

Philip H. Sendel, 48, was elected a corporate vice president and appointed president of Martin Marietta Cement to succeed LeVine. He had been executive vice president of the Cement company.

In Martin Marietta Aluminum, Dr. Bernard W. Gamson, 62, was elected to a new position, executive vice president, and Dr. George W. Morgenthaler will succeed him as vice president, primary products. Dr. Gamson has been with the Aluminum company nine years. Dr. Morgenthaler, 52, a 19-year Martin Marietta employee, has been vice president, operations, primary products, for the Aluminum company. At one time he was vice president technical operations for the Denver Division.

Robert W. Powell Jr., 49, will become corporate treasurer January 1 upon the retirement of Leonard M. Schoon.

The minimum cash gift that will be matched is \$25.

Institutions of higher learning to which gifts are made must be accredited by recognized regional accreditation organizations and have tax-free status under IRS regulations. Employee contributions under the program are tax deductible.

Information may be obtained from the training, education, and employee development office, SSB 409.

## Faint object spectrograph is key instrument on Space Telescope mission

The faint object spectrograph being produced by the division is "at the heart of the space telescope program," according to David Leckrone, program scientific instruments scientist, and Richard Harms, principal investigator for the faint object spectrograph.

Leckrone, with NASA's Goddard Space Center, and Harms, from the University of California at San Diego, were recently in Denver to discuss the space telescope program with division employees.

Space Telescope, scheduled to be launched by Space Shuttle in late 1983 or early 1984, will observe objects seven times farther away than those that can be observed by Earth-bound instruments. From its 500 kilometer orbit, Space Telescope can take advantage of being above the Earth's atmosphere.

In addition to the faint object spectrograph, space telescope will be equipped with four other instruments: faint object camera, high resolution spectrograph, wide-field and planetary camera, and a high speed photometer.

The length of space telescope's mission is open-ended, Leckrone said, with current plans calling for 15 to 20 years of observation. The spacecraft's life can be extended because of in-orbit maintenance that can be handled by a Space Shuttle crew.

"We plan in-orbit maintenance about every two and one-half years if necessary," Leckrone said. "Minor maintenance and even instrument replacement can be done by astronauts in orbit.

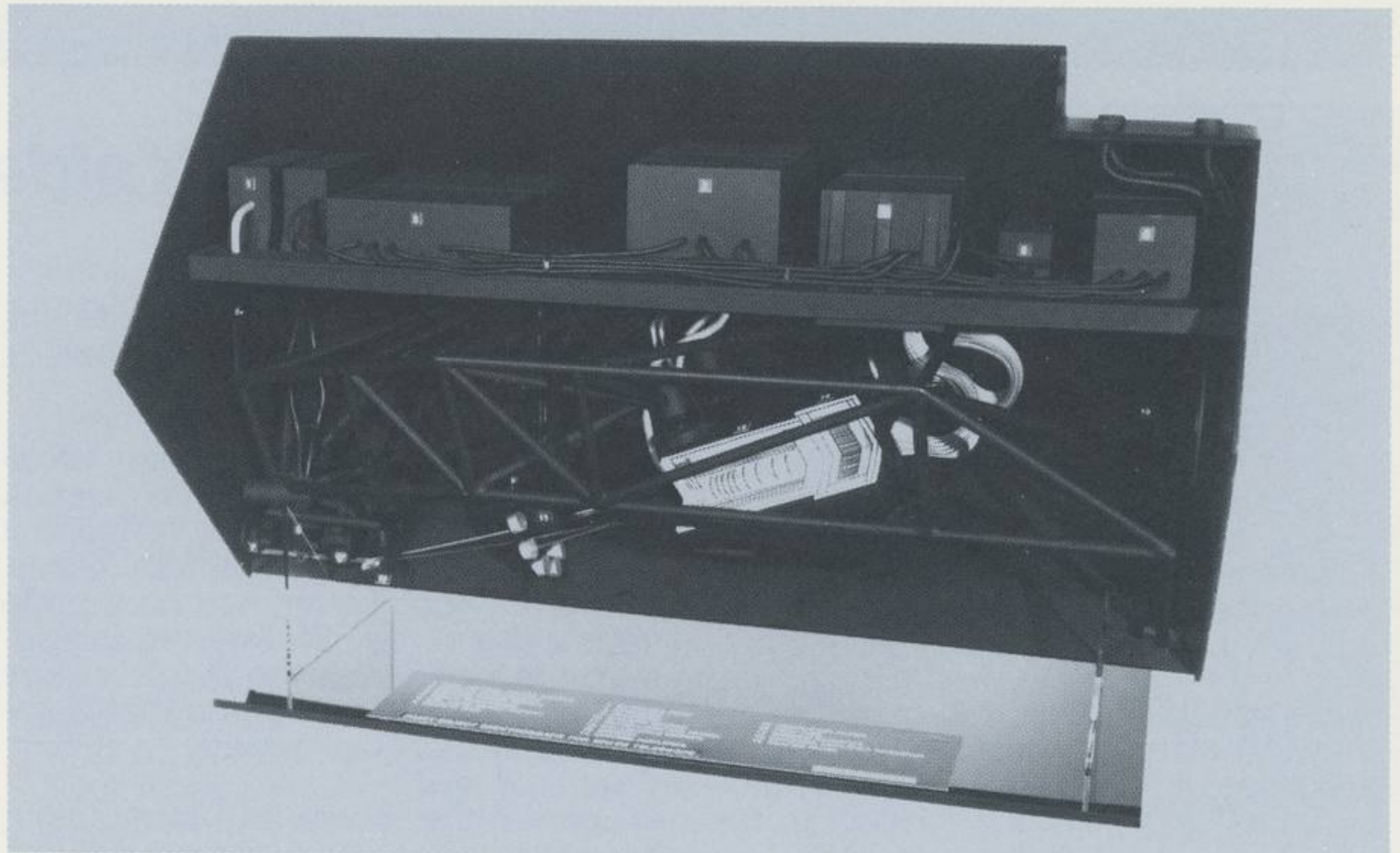
"We can bring the Space Telescope back to Earth aboard shuttle orbiter if we need major refurbishment, such as mirror recoating," he said.

Although the five instruments planned for space telescope are the maximum it can carry, the design provides for changing instruments to increase the craft's capabilities.

"That is the beauty of Space Shuttle," Leckrone said. "It makes Space Telescope a real observatory, not just another instrument."

The faint object spectrograph will be used, as its name implies, to look at the faintest objects to determine their temperature, density, chemical composition, and how fast they are moving.

"We will be looking further back in time," Harms said, "to determine the evolution of these objects."



The model of the faint object spectrograph in the photo shows the configuration of the instrument that will be mounted on Space Telescope.

The faint object spectrograph will record digital data every 100 minutes, either storing it aboard the telescope or transmitting it directly to a ground station at White Sands, NM. From White Sands, the data will be sent to a relay satellite for transmission to Goddard, with engineering data going to the Space Telescope operations center there. Science data and some engineering data will go to the more than 1000 scientists involved in the program.

Four NASA field centers, nine principal contractors, the European space agency, and 22 centers of higher learning are par-

ticipating in the space telescope project.

Contractors, including the Denver Division, have completed preliminary design reviews and are proceeding with detailed design work. Critical design reviews will be held in 1980.

The faint object spectrograph is scheduled for December 1981 delivery. It and other instruments will go to Goddard for verification and acceptance testing. When these tests are complete, all instruments will be sent to Sunnyvale, CA to be mounted on the telescope at Lockheed for total systems tests.

## Recreation

**Fall Tennis Tournament:** Winners in the tournament were:

Men's Singles: Class A — David Quesenberry; runner-up, James Aurand. Class B1 — Donald Allayaud; runner-up, Stewart Scales. Class B2 — Robert Johnson; runner-up, Everett Palmer. Class C — Barry Power; runner-up, Douglas Cross.

Men's Doubles: Class A — Donald Allayaud and John Phelps. Class B1 — Keith Davis and Walter Gross; runners-up, Lawrence Leang and L. James Faber. Class B2 — James Eikenberry and Timothy Patton; runners-up, John Waring and Jeff Waring. Class C — Jerome Tussey and Stanley Pore; runners-up, Newell Fuhrmann and David Barnett.

Mixed Doubles: Class A — Ann Habeger and Thomas Herbst. Class B — Lewis Dorough and

Linda Dorough; runners-up, Ronald Frank and Marilyn Maegley. Class C — Robert Fujiu and Elaine Fujiu; runners-up, Merle Turner and Carol Turner.

**Parapsychology Club:** Jack Young, lecturer, teacher, and Denver psychic will be the guest speaker at the November 15 meeting at 5 pm in the engineering building presentation room. He will speak on "ESP in Business" and demonstrate psychometry. Seating is limited to 50. Call extension 4209 for reservations.

**Ski Cards:** Two ski cards, Vail's Colorado Card and Ski America Card, are being offered at discount rates to employees. The Colorado Card will be available until December 10; the Ski America Card from November 19 until December 21. Cards may be purchased at the recreation office, engineering building 125.

## At Vandenberg

### Field engineer becomes cookbook aide

Peter S. Aldrich is a senior field engineer in the ground support systems operation at Vandenberg by trade, but for several years has been involved in a quite different occupation — one that has taken him into the 21st century.

It all began in 1970 when his father, Byron Aldrich, became ill and the doctor ordered a salt-free diet. Aldrich's mother, Mrs. Florence Aldrich, searched for recipes listing the sodium content of individual ingredients. She found none and began compiling data on the nutritional components of each recipe, in-



Douglas Webster, Daniel W. Greene, and James M. Berg examine system team schedule sheet.

cluding sodium, calcium, potassium, calories, carbohydrates, cholesterol, vitamins, proteins, fats, and iron.

She realized others with dietary problems could benefit from the information and decided the best way to make it available was in a cookbook. Mrs. Aldrich, an experienced writer, had no trouble translating some 600 recipes, including more than 20,000 foods, into a warm and friendly cooking guide that is enjoyable and educational.

Preparing the tables and formulating the conversions was a bit more difficult. This is where Aldrich put his engineering experience to work to prepare a layout, format tables, and help in the programming to calculate conversions.

Five years later, Mrs. Aldrich, then 75, saw her efforts rewarded when *The Twenty-first Century Cook Book* was published. Her innovative approach to dietary and nutritional cooking has been acclaimed by such culinary experts as Julia Childs and has been reviewed in newspapers from coast to coast.



Peter S. Aldrich, a senior field engineer in GSS operations, makes a table comparison for the second edition of his mother's cookbook. The author, Mrs. Florence Aldrich, who contributes her capacity for work and vigor to "just good genes and the fact I'm not a hypochondriac," checks a computer analysis of the information.

### New approach being used to develop Shuttle systems

An innovative approach to develop 95 systems needed for servicing and check out of Space Shuttle elements is being used at Vandenberg operations.

Daniel W. Greene is manager of the newly organized system development department for the ground support system project.

The three shuttle elements — orbiter, external tank, and solid rocket booster — require fuel loading, power distribution and control, and drain and purge of the orbiter.

Fourteen teams have been formed to develop the systems for performing these tasks. The team consists of a team leader, systems engineer, mechanical designer, electrical designer, operations engineer, CCMS applications program engineer, and math model designer.

The teams will develop basic systems design, CCMS computer application programs, system computer math models, mechanical and electrical schematics, and detailed operating criteria for each of the systems.

## At Canaveral



Forty-five Brevard County civic leaders made a fall tour of Air Force installations and also were guests at the Denver Division. They are shown here in the Titan III assembly area. The tour was conducted by 6550th Air Base Wing civilian-military council.

# Employee of month is cook, collector

When group engineer Bill Warren is away from work, chances are he is either creating a gourmet meal for friends or looking for unique bottles.

His cooking specialties include "anything that has to do with seafood" and several of his special dishes are on restaurant menus in Baltimore. His bottle collection features not empty bottles, but unique decanters filled with various liquors and cordials.

"I collect any type of fancy liquor bottle I can find," he said.

Bookcases in his family room are filled from floor to ceiling with his unique display of more than 250 bottles. The most valuable is a cordial decanter of Marie Antoinette worth \$450.

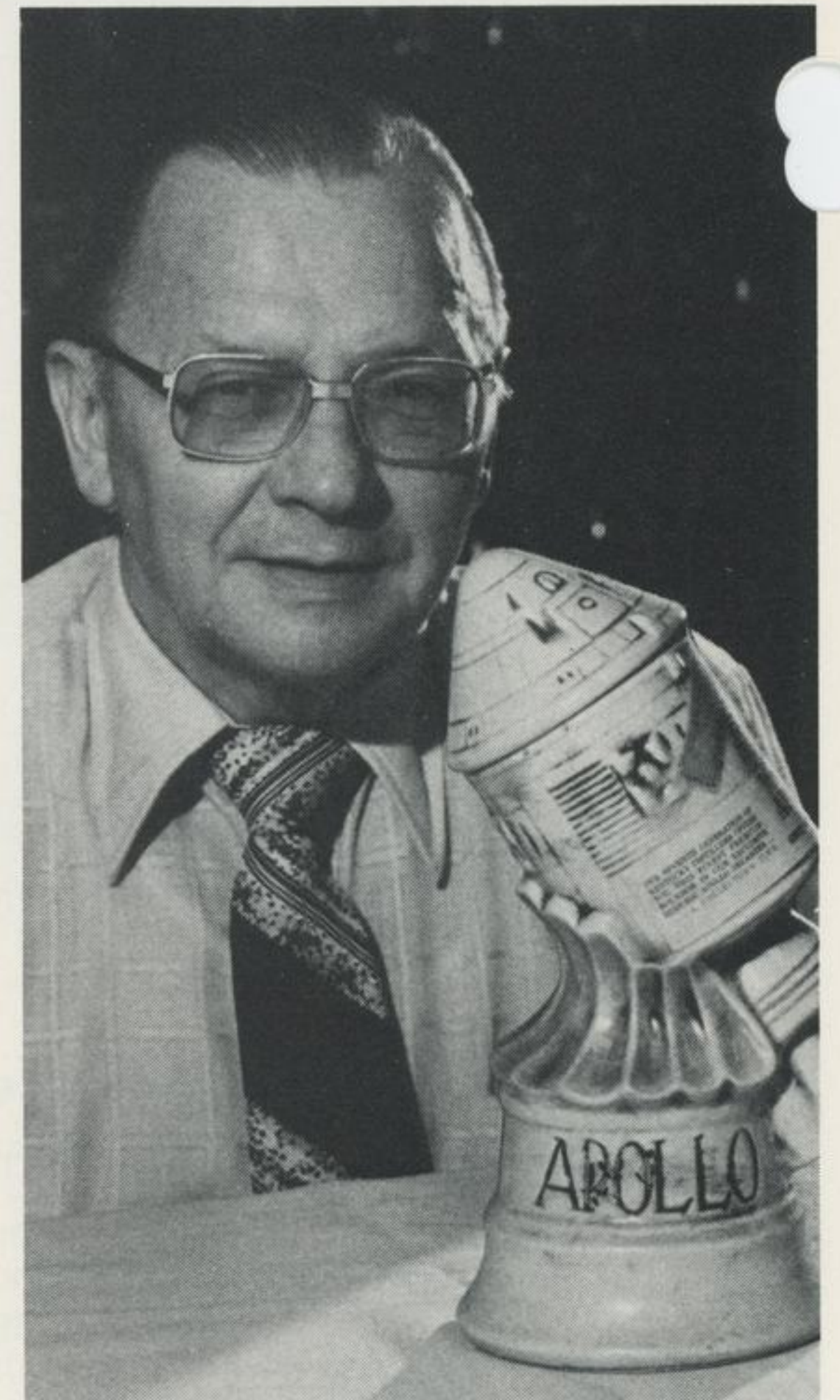
He is as enthusiastic about his work as he is about his hobbies. He was named October employee of the month at Michoud for his outstanding contribu-

tions as a group engineer on structural interface design and interface coordination.

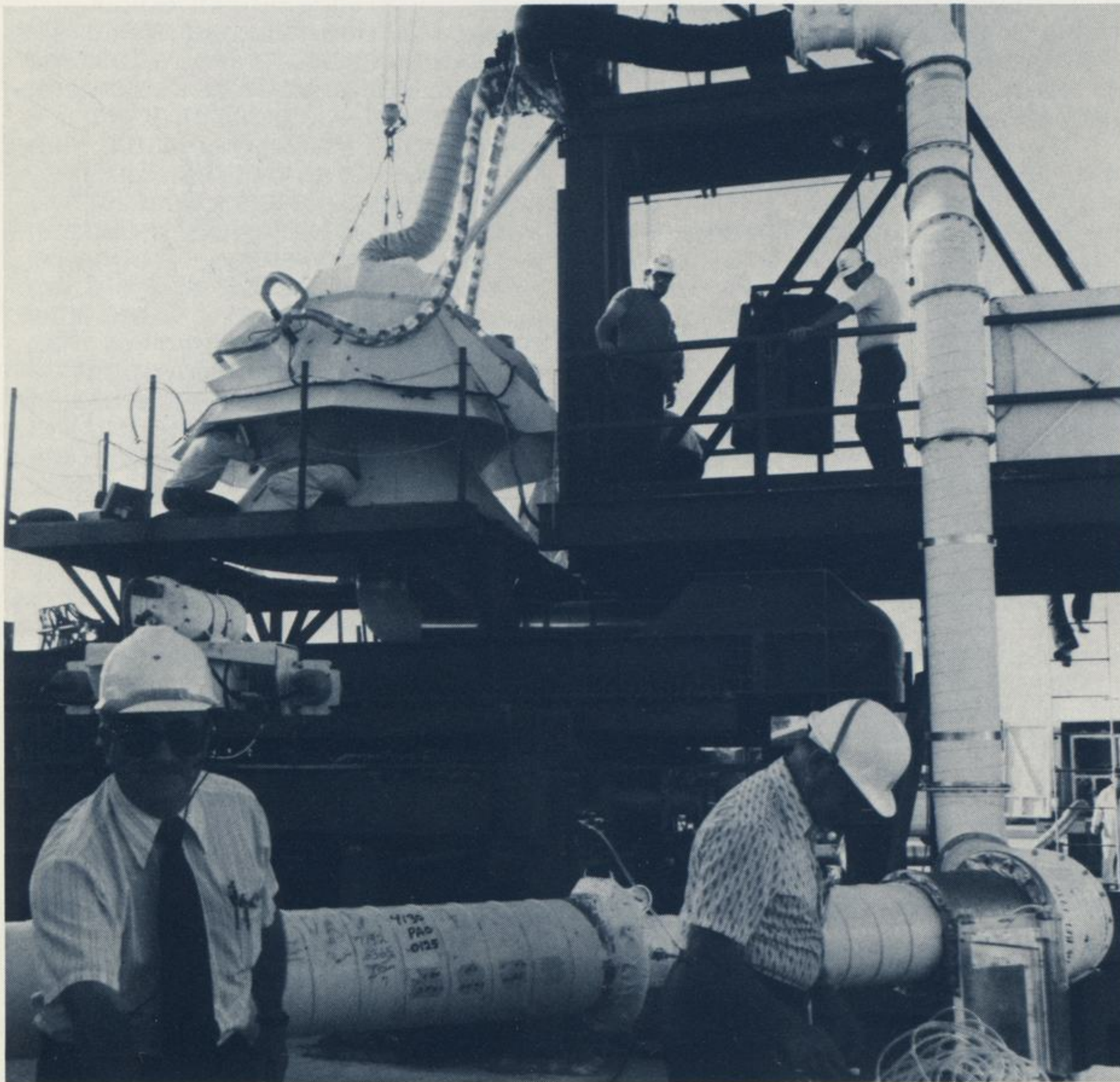
Since joining Martin Marietta as a propulsion design engineer in 1937, Warren has moved with the company from Baltimore to Orlando to Denver and, in 1973, to New Orleans.

Of all the engineering programs, Warren says his most challenging assignment was in Denver from 1969-73 when he worked on Viking structural designs. "Our work on Viking was exciting because we were working on an entirely new type of vehicle that had to function properly on Mars."

After working for a company 42 years, it would seem natural to think about retirement. Not Bill Warren. "I plan on staying with Martin Marietta as long as I can," he said. "I'm not planning on going anywhere."



Collector Bill Warren displays one of his unique liquor decanters.



Tests are under way at the Kennedy Space Center on this nose cone cap for the external tank, one of several proposed methods of preventing formation of ice on the tank's nose prior to launch. Tests showed that liquid oxygen vapors could form ice that might dislodge at launch and damage the orbiter's protective tile. The cap is lowered over the top of the external tank and sealed with an inflatable collar. Venting oxygen vapors are pumped under the cap and released away from the vehicle. The cap will be attached to a swing arm on the launch stand and swung safely aside just before launch.

## Groups meet to improve problem solving at Michoud

More than 70 employees at Michoud are meeting weekly in small teams to solve mutual problems on the job, improve their work relationships with other employees, and increase the quality of their work.

The groups, called systems refinement teams, are volunteers from all levels of the organization who get together to iron out work-related problems and make recommendations to their supervisors.

Guidelines, format, and employee performance information are all provided to the groups by staff members in the manned flight awareness department at Michoud who started the program about six months ago.

The first seven teams recently graduated from their nine introductory one-hour sessions in a ceremony held by Kenneth P. Timmons, Michoud operations vice president.

Already there is early information that shows the groups have brought about increased safety, better communication between employees, higher quality work, and reduced costs.