

# Orange Soil Undergoes Close Examination

The Apollo Sample Return Container (ALSRC #2), which contained the orange rock found at Shorty Crater during the second lunar field trip of Apollo 17, was opened Wednesday morning, December 27.

Scientist-Astronaut Harrison H. "Jack" Schmitt, Apollo 17 lunar module pilot, was one of the first to look at the sample of "orange" soil which brought back from the Taurus-Littrow landing site. His first reaction was "It doesn't look the same."

Schmitt discovered the material at Shorty Crater during the second Apollo 17 extravehicular activity (EVA-2).

Most of the geologists and staff viewing the sample agreed that it was more tan and brown than orange. Closer comparison with color charts showed that the sample had a definite orange cast, according to MSC geology branch chief William Phinney.

After closer investigation and seiving, it was discovered that the

orange color was caused by very fine spheres and fragments of orange glass in the midst of darker colored, larger grain material.

Earlier in the day the "orange" soil was taken from the Apollo Lunar Sample Return Container No. 2 and placed in the bolt-top can as was all the material in the ALSRC "rock box."

Among the initial tests performed immediately after the rock box was opened was a gas anal-

*(Continued on Page 2)*

## Black Christmas Project Exceeded Its Goal

For the second consecutive year, the Black Christmas Project, motivated by the theme, "It's a Family Affair," has known the satisfaction of meeting the needs of people less fortunate than themselves.

It was the generosity of the MSC community, however, that permitted the spreading of more good will and Christmas cheer than was originally planned by project officials.

Because of this generosity, 52 families, 12 more than originally envisioned and 30 more than the 22 of 1971, were presented food baskets and toys.

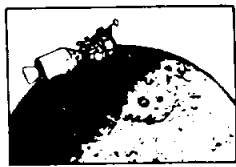
Project figures indicate that nearly 400 people benefitted directly from this endeavor, which was sponsored by black MSC and contractor employees.

As was the case last year, even though each child received an individual toy, the Christmas dinner menu was outstanding. Included in the basket was a turkey, all necessary ingredients for dressing, salad and dessert plus three different vegetables and cranberry sauce. It added up to two large shopping bags filled with food stuffs.

# ROUNDUP

NASA MANNED SPACECRAFT CENTER

HOUSTON, TEXAS



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ASTRONAUTS RETURN—Family and friends were at Ellington Air Force base to greet the astronauts upon their return from the moon. In the above photo "Jack" Schmitt is seen conversing with the crowd. In the bottom photo, Cernan (left) and Evans (right) are embracing their loved ones.



## Cuero Man Brings Bird of Thanks to MSC

World traveler Keyes Carson of Cuero, Texas recently presented a 55-pound turkey to Apollo 17 director Gerald Griffin as a symbol of thanks to all of the Apollo 17 flight directors.

Carson has been presenting turkeys to outstanding people since 1940 when he was a 24-year-old Aggie senior campaigning for President Franklin D. Roosevelt.

"I said if he were re-elected I would hitchhike to Washington to give him a turkey which I did," Carson said.

Carson obtains most of his turkeys from Cuero, known as the

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TURK-TURK—Cuero Man Keyes Carson presented this 55-pound turkey to Gerald Griffin, Apollo 17 flight director on behalf of all the flight directors for helping to bring about a successful mission. Turk Turk has been presented to many world-famous persons for great accomplishments.

## Future Missions Will Add To Space Benefits

With the end of the Apollo project, the United States now turns attention back to earth with orbiting projects intended to bring the benefits of space to man.

The emphasis will be on making space work for society on earth—concentrating on better communications, education, weather prediction and control, monitoring earth's resources and developing new medical and manufacturing processes.

The first step will be Skylab, a two-story space station which will accommodate three different three-man crews for a total of five months in orbit in 1973.

Skylab, with the volume of a medium-sized house, is to be

launched unmanned next April 30 by a Saturn 5 rocket. The first crew, commanded by astronaut Charles "Pete" Conrad will be launched the next day in a modified Apollo capsule by a smaller 1B rocket.

The astronauts will link up with Skylab 270 miles above the earth and enter it for a 28-day stay. On July 29 a second three-man team will rocket up to the same laboratory, this time for 56 days. The project is to end in December 1973.

The Skylab astronauts will conduct 87 different experiments aimed at developing techniques for surveying earth's resources from space, determining man's ability to live and work in dense

atmosphere, and experimenting with space manufacturing.

In gestation also is the space shuttle, a rocket plane that will operate like an airliner, making countless trips into orbit and opening the gateway of space to men and women of many nations and walks of life.

Between Skylab and the shuttle will be one of the most significant flights yet—a joint mission in 1975 by American astronauts and Soviet cosmonauts.

The mission is to start July 15, 1975 with the launch from the Soviet Union of a Soyuz spacecraft with two men aboard. About 7½ hours later, an American Apollo spaceship with three astronauts will be launched.

# President Announces Federal Employees Pay Increase

President Nixon has signed into law a pay raise for GS employees to be effective at the beginning of the first pay period after January 1, 1973, (effective January 7, 1973). The new pay rates shown on the right give an average raise of 5.1 percent.

Those employees receiving pay in a special rate range (e.g., merical officers) will receive a pay increase equivalent to that of employees in the regular rate. Full information on special rate ranges has not been received from the Civil Service Commission. It will be made available to affected employees when received.

## Christmas Project—

(Continued From Page 1)

All of this was made possible by the more than \$1700 in cash plus some additional toys and clothes which were so willingly given.

Since the Center and offsite contractors (IBM, Kentron, Philco, Grauman, Univac, Lockheed and Brown and Root Northrop) were so responsive to the cry for help, the project funds at last accounting indicated a \$600 surplus. This surplus will be used to set up an emergency fund meeting the needs of the community for which it was originally intended.

Because of its successes and first-hand experience in helping the needy, Black Christmas Project is currently planning to establish a more permanent organization.

Members will be requested to donate time, skills and talent to several worthwhile community projects spread over the year.

## Disaster Area Surveyed By NASA Earth Observation Aircraft

A NASA C-130 earth observations aircraft has completed a two-day aerial photographic survey of the earthquake-stricken city of Managua, Nicaragua.

The survey, initiated at the request of the Nicaraguan government, covered more than 500 square miles as the aircraft made a series of overlapping flights last Thursday.

An estimated 90 per cent of the region was surveyed Thursday before the plane made its scheduled landing at Albrook Air Force Base in the Canal Zone.

Since weather conditions remained good, the final 10 per cent of the survey was completed during the return flight.

The aircraft carried a crew of fourteen including a complete earth observations team and two geologists—Dr. Robert Brown from the U. S. Geological Surveys National Center for Earthquake Research and Dr. David Amsbury from the Earth Observation Division of NASA's Man-

ned Spacecraft Center.

Data from the survey aircraft, which carries mapping and multi-band cameras and thermal scanners, will be provided to Nicaraguan officials and to U.S. scientific teams sent to assess the damage to the capital city and surrounding area.

The aerial photographs will aid disaster relief officials in discovering open transportation routes, areas suitable for relief centers, and portions of the city requiring demolition teams.

The data area was expected to be returned to Nicaragua last Saturday, with arrangements made to provide materials to U.S. Geological Survey (USGS) and National Oceanographic and Atmospheric Administration (NOAA) earthquake teams at the site.

In addition, the material will provide investigators in the United States with information on earthquake dynamics and on reasons for the heavy structural damage observed in Nicaragua.

### JANUARY 1973 PAY TABLE

#### FEDERAL CLASSIFIED EMPLOYEES

Grade	1	2	3	4	5	6	7	8	9	10
GS-1	\$4,798	\$4,958	\$5,118	\$5,278	\$5,438	\$5,598	\$5,758	\$5,918	\$6,078	\$6,238
GS-2	5,432	5,613	5,794	5,975	6,156	6,337	6,518	6,699	6,880	7,061
GS-3	6,128	6,332	6,536	6,740	6,944	7,148	7,352	7,556	7,760	7,964
GS-4	6,882	7,111	7,340	7,569	7,798	8,027	8,256	8,485	8,714	8,943
GS-5	7,694	7,951	8,208	8,465	8,722	8,979	9,236	9,493	9,750	10,007
GS-6	8,572	8,858	9,144	9,430	9,716	10,002	10,288	10,574	10,860	11,146
GS-7	9,520	9,837	10,154	10,471	10,788	11,105	11,422	11,739	12,056	12,373
GS-8	10,528	10,879	11,230	11,581	11,932	12,283	12,634	12,985	13,336	13,687
GS-9	11,614	12,001	12,388	12,775	13,162	13,549	13,936	14,323	14,710	15,097
GS-10	12,775	13,201	13,627	14,053	14,479	14,905	15,331	15,757	16,183	16,609
GS-11	13,996	14,462	14,928	15,394	15,860	16,326	16,792	17,258	17,724	18,190
GS-12	16,682	17,238	17,794	18,350	18,906	19,462	20,018	20,574	21,130	21,686
GS-13	19,700	20,357	21,014	21,671	22,328	22,985	23,642	24,299	24,956	25,613
GS-14	23,088	23,858	24,628	25,398	26,168	26,938	27,708	28,478	29,248	30,018
GS-15	26,898	27,795	28,692	29,589	30,486	31,383	32,280	33,177	34,074	34,971
GS-16	31,203	32,243	33,283	34,323	35,363	36,403*	37,443*	38,483*	39,523*	

\*Present law establishes \$36,000 as pay ceiling

## Orange Soil—

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ysis. Initial chemical tests aided planners in deciding which principal investigators would receive samples of the orange rock. Other tests include:

- (1) chemical analysis of major and trace elements.
- (2) microscopic analysis.
- (3) carbon tests
- (4) a sample was heated to 1200 degrees centigrade to determine gaseous products

## Apollo 17 Breaks Several Lunar Records

The last scheduled manned mission to the moon for the United States broke several records set by previous missions.

Launched December 6, 1972, Apollo 17 records include:

Longest manned lunar landing flight: 301 hours, 51 minutes, compared to 295 hours, 11 minutes for Apollo 15.

Largest lunar sample return: An estimated 115 Kg (249 lbs), compared to 95.4 Kg (210lbs) for Apollo 16.

Longest time in lunar orbit: 147 hours, 48 minutes, compared to 145 hours, 16 minutes for Apollo 15.

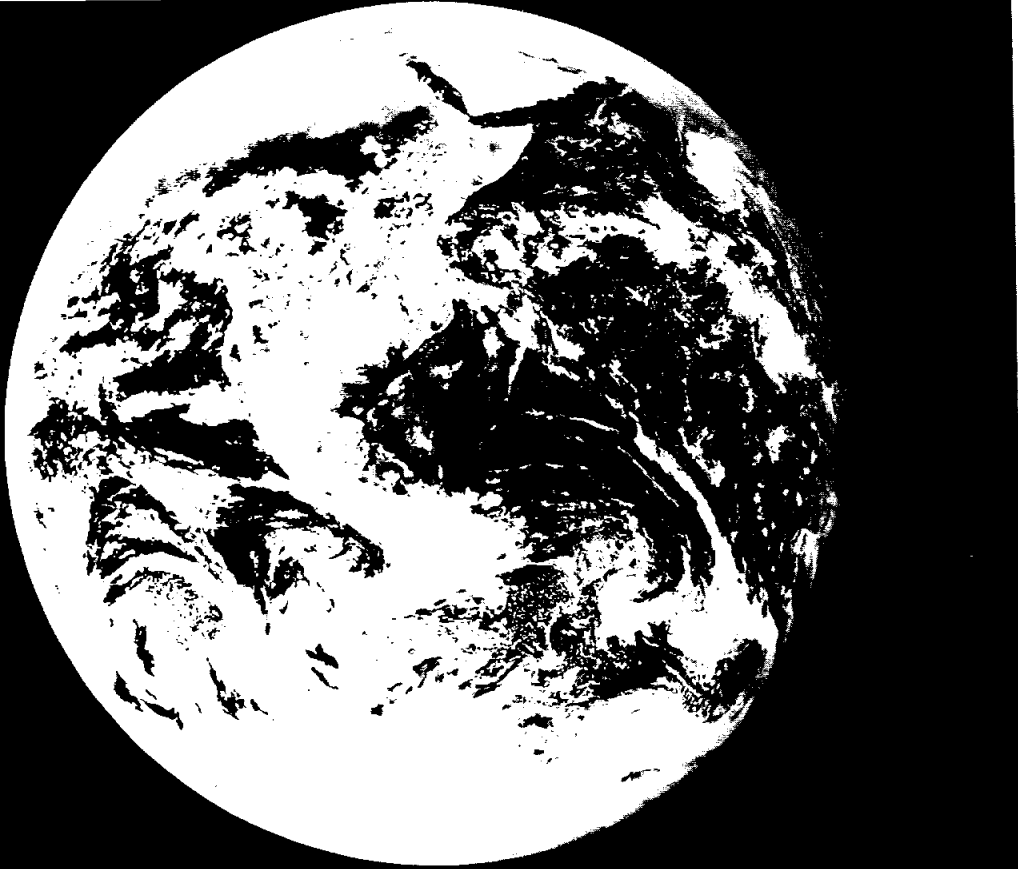
The Apollo 17 flight was the second longest of the 27 manned

missions carried out by the United States since 1961. Only the 330 hours, 36 minute flight of Gemini 7 was longer.

With the completion of Apollo 17, the United States has had men in space for 3528 hours, 47 minutes, compared to a total mission time of 2145 hours, 36 minutes for the Soviet Union.



NICARAGUAN EARTHQUAKE DAMAGE—A low-altitude aerial view of the Central American city of Managua, Nicaragua, showing extensive damage caused by the earthquake of December 23, 1972. This photograph of the capital city was taken at an altitude of 3,000 feet six days after the disastrous earthquake. This picture was taken from a NASA C-130 earth observations aircraft, using Kodak Ektachrome (serial) film. Some buildings and rubble are still burning.



**APOLLO 17 VIEW OF EARTH**—This fantastic view of the Earth was seen by the Apollo 17 crewmen during their journey toward the Moon on their lunar landing mission. This outstanding translunar coast photograph extends from the Mediterranean Sea area to the Antarctica south polar ice cap. This is the first time the Apollo trajectory made it possible to photograph the south polar ice cap.



Astronaut Harrison H. Schmitt (top) collects lunar samples at station 1 during the first Apollo 17 EVA; Schmitt (bottom) facing camera was one of the first to look at the sample of "orange material" which was brought back from the Taurus-Littrow landing site. The orange sample is in the bag on a weighing platform in the sealed nitrogen cabinet in the upstairs processing line in the Lunar Receiving Laboratory at MSC.



**Bird of Thanks**

"Turkey capital" of the world. About the turn of the century, practically everyone in the Cuero area kept a flock of turkeys. At that time, everyone drove the turkeys to market, much like cattle drives. They came by the hundreds and soon the thousands to Cuero.

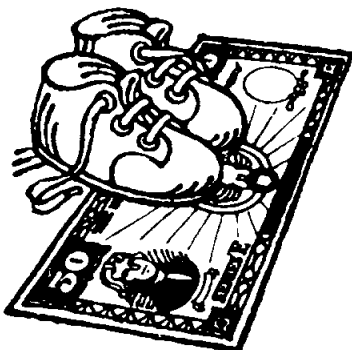
In 1912, the name "Turkey Trot" was selected to commemorate this spectacle and a fair and kingsize parade and celebration began.

In 1966 Turk Turk, the bird presented to Griffin, flew around the world in 2½ days to help publicize the Cuero Turkey Trot parade and to celebrate the success of the Gemini program.

In 1967, this same bird was presented to astronaut Walter M. Schirra, Jr., commander of Apollo 7.



**Present for the future.**



Take stock in America. Give U.S. Savings Bonds

**Roundup Swap-Shop**

Swap Shop advertising is available to MSC and on-site contractor personnel. Articles or services must be offered as advertised without regard to race, religion, sex or national origin. Ads should be 20 words or less, including home telephone number. Name and office code must accompany, but need not be included in ad copy. Typed or printed copy must be received (AP3 Attn: Roundup) by Thursday of the week before publication.

**HOUSEHOLD ARTICLES**

Authentic Mexican furnishings, hdbboards, desks, cabinets, etc, 2305 NASA RD 1, 474-2102.

**MISCELLANEOUS**

Heath HW 32-A, new \$90; Collins Mobile supply, \$100. Drake RV-3 VFO, \$50. Lindsey, 448-0517.

Sewing machine, console model, xInt cndn, used twice, versatile, complete w accessories. cost \$225, will sacrifice for \$150. Single bed including mattress and box springs, xInt cndn, \$40. GE B&W television, nds minor repair, \$30, Carol, x 4731.

Set of "mag wheels, 14"x7" rims, full polished, oval slots, all hardware included, like new, \$125. York 488-2188 after 5 p.m.

Savage 20 GA Pump, xInt cndn, 1 yr old, has recoil pad and vinyl case, Musgrove 488-3966.

**PROPERTY AND RENTALS**

Pecan Forest League City, contemp 3-2-2, fireplace, shag, fenced, cul-de-sac, 1½ years old, Ratcliff, 554-5075.

Nassau Bay, 3-2-2½, contemp, living, dining, family rooms w fireplace, lot w large oaks, 474-4349.

Beautiful vacation home on Lake Jacksonville, 600 sq ft home, completely furnished w 400 sq ft Redwood porch directly overlooking the Lake, 2-acre lot w 200 ft of lake frontage, lrg pier and storehouse, 422-6367.

League city 4 bdrms, 2 bth, central a/h, fenced yard, paneled, den w fireplace, for lease or sale, 488-4451 after 5 p.m.

New townhouse for rent, CLC 2-2-2, outside storage, enclosed patio, utility room, \$200 per month, 488-0621.

**VEHICLES**

Bikes, man's 26", girl's 24, oldies but goodies, \$15 each, 488-1244.

67 GMC ¾ ton truck w air, 10½ cab-over camper, stove, ice box, jort-a-potty, sleeps 4, \$2000. Melvin Tays x 3343 after 5 p.m. 544-5182.

65 Nova, gd transportation, air 534-4121.

68 Hona 350, custom paint, windshield, xInt cndn, \$400. Blackshear 946-8312.

70 Yamaha 350 cc R5, best offer over \$400, 538-2228.

Shasta, 21 ft xInt cndn, full self contained, air, \$2500, Gilley, 554-4686.

xInt second or third car, mechanically perfect, 63 Impala, 4 dr Sedan, radio, air, fair tires, \$300. will negotiate, Fulbright, 944-8717.

67 Falcon, gd mechanical cndn, standard, nw clutch, 334-1243 after 5 p.m.

64 Ford Country Sedan, air, auto, \$400. Foster, 487-0155.

**BOATS**

15" Hurricane fiberglass boat, 75 hp, Evinrude motor, Shopbuilt, trailer-buddy bearings, new tires, new battery, gd cndn, \$800. Ronnell, 464-1157.

**PETS**

AKC registered Boxer pup, male 7 wks old, brown with white markings, xInt bloodlines, \$75. Pratt 479-5152.

**WANTED**

Amateur radio equipment, operating or otherwise, Lindsey, 488-0517.

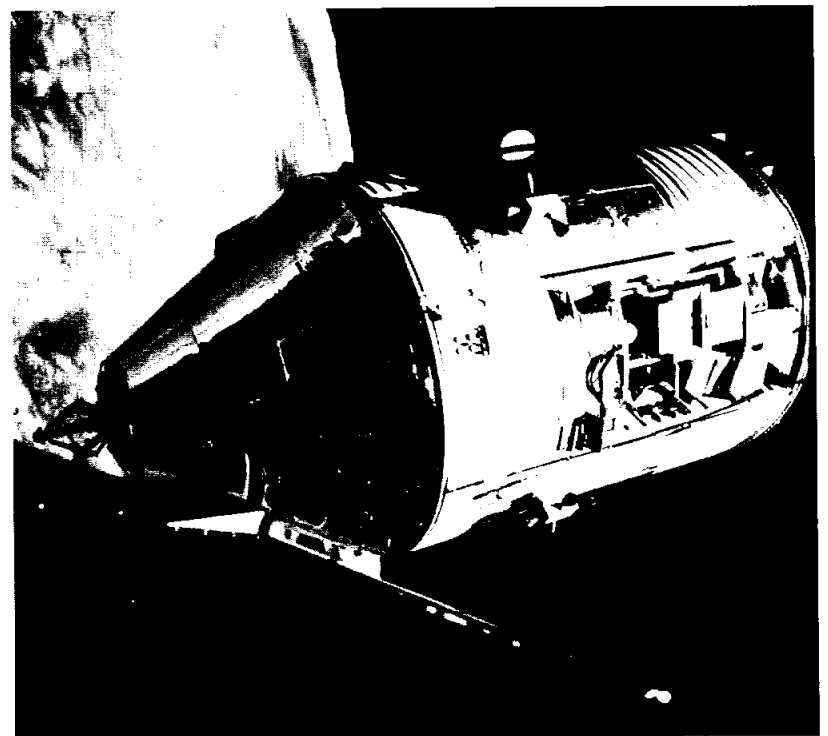
Metal frame for child's "Wonder horse" rocking horse, Bruce, 944-3166.

**MSC Chess Club Held Tournament**

First place in the 1972 December Rating Tournament, held by the MSC Chess Club, was won by Richard W. King with a perfect score of 3-0.

Following closely for second place was Alec W. Gallia with 2½-½. The event which took place at Bldg 336, Ellington AFB, and extends an open invitation to all area chess enthusiasts, whether beginners or experts, to attend its regular meetings at any time.

For further information, contact Alec W. Gallia at 944-8338 (home), 483-7236 (office) or John Lyon at 483-2308.



**APOLLO 17 CSM VIEWED FROM LM**—An excellent view of the Apollo 17 Command and Service Modules photographed from the Lunar Module "Challenger" during rendezvous and docking maneuvers in lunar orbit. The LM ascent stage, with Astronauts Eugene A. Cernan and Harrison H. Schmitt aboard, had just returned from the Taurus-Littrow landing site on the lunar surface.

**ROUNDUP**

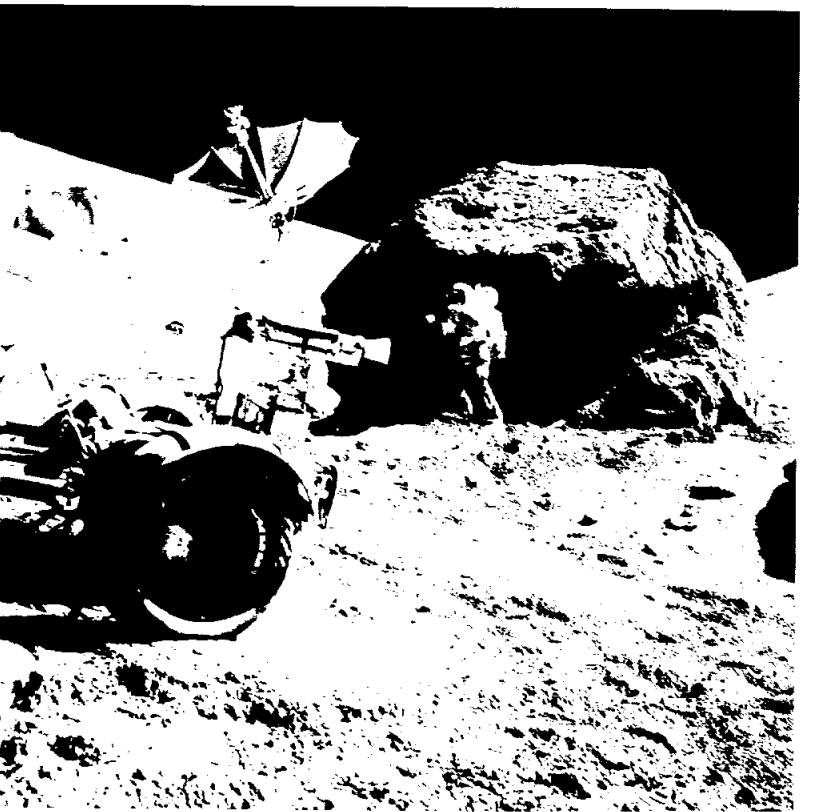
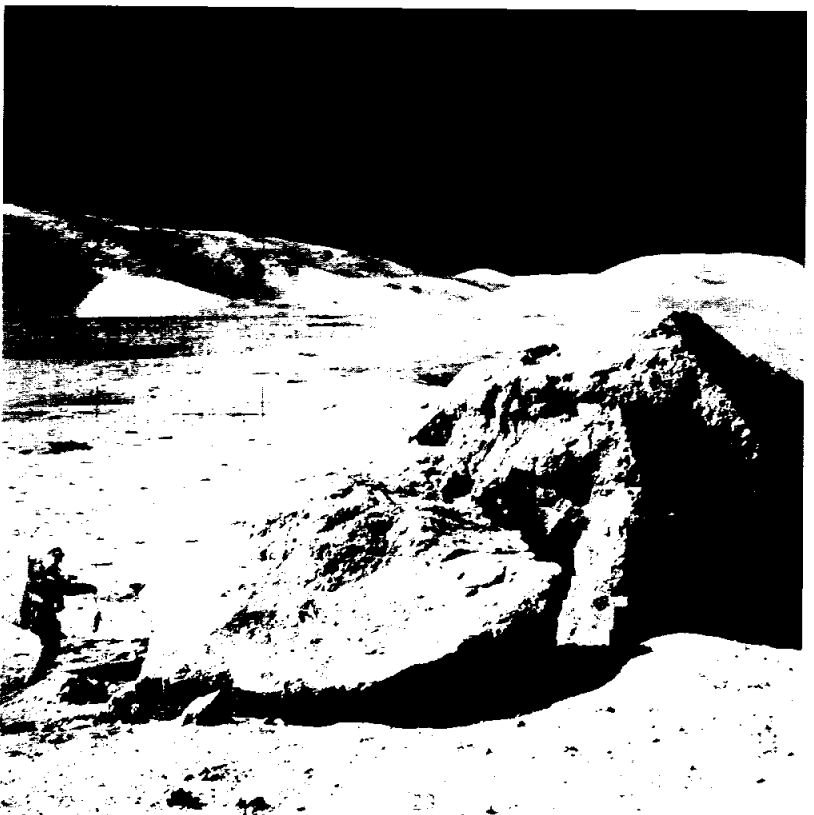
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Editor: Janet Wrather Photographer: A. "Pat" Patnesky

# Looking Over The Shoulders Of The Apollo 17 Crew



Cernan (top) stands near an overhanging rock during the third Apollo 17 lunar surface extravehicular activity; Schmitt (middle) is seen working beside a huge boulder at Station 6. The front portion of the Lunar Roving Vehicle is visible on the left; Schmitt (bottom) is photographed standing next to a huge split boulder during EVA- 3.

## Cryogenic Tanks May Aid Future Space Travel

Space travel of the future may rely upon the development of cryogenic storage tanks of great capacity and high efficiency that could support space missions of more than 180 days, which Beech Aircraft is carrying out for the National Aeronautics and Space Administration.

The same technical team at Beech Aircraft's Boulder Division that produced the cryogenic gas storage system for every Apollo mission has now developed test tank articles capable of carrying up to 50 times as much oxygen and 120 times as much hydrogen as the Apollo system.

First article to be developed in the program was a seven-foot, seven inch diameter spherical oxygen test tank, which has a capacity of 16,000 pounds of liquified oxygen. Its elaborate insulation system is capable of maintaining the oxygen at 297 degrees below zero F., the temperature at which gaseous oxygen converts to liquid.

The oxygen tank, now completed, has undergone an elaborate program of structural, hydrostatic, fuel flow, cold shock and thermal performance testing at the Boulder Division.

A 46-day program involving thermal performance testing with liquid nitrogen has been completed and the oxygen test tank is now undergoing thermal tests with liquid helium, the coldest substance known to man.

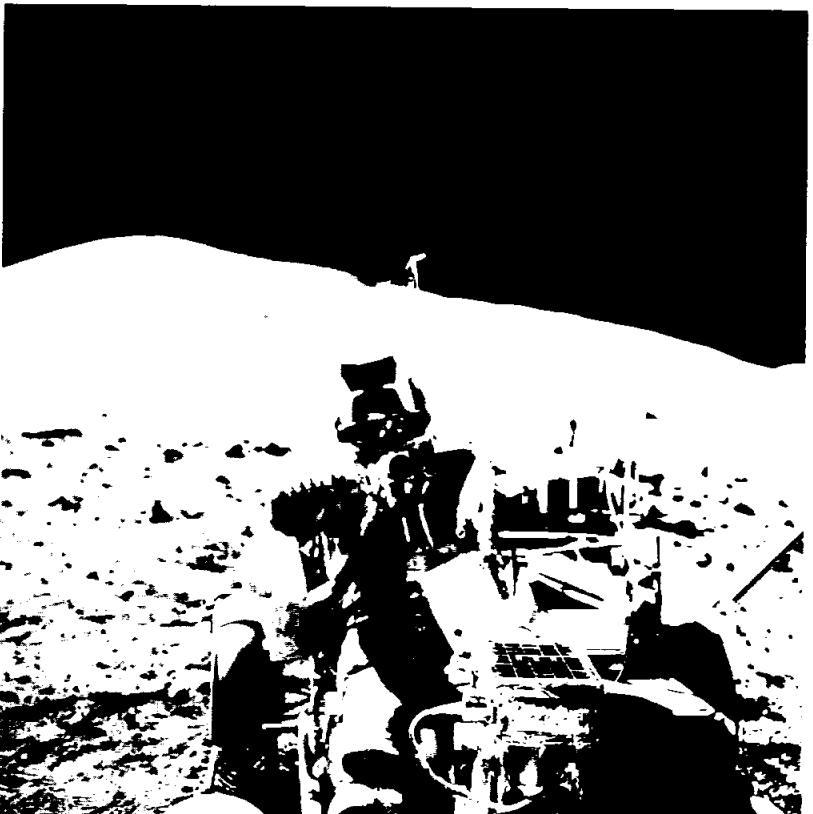
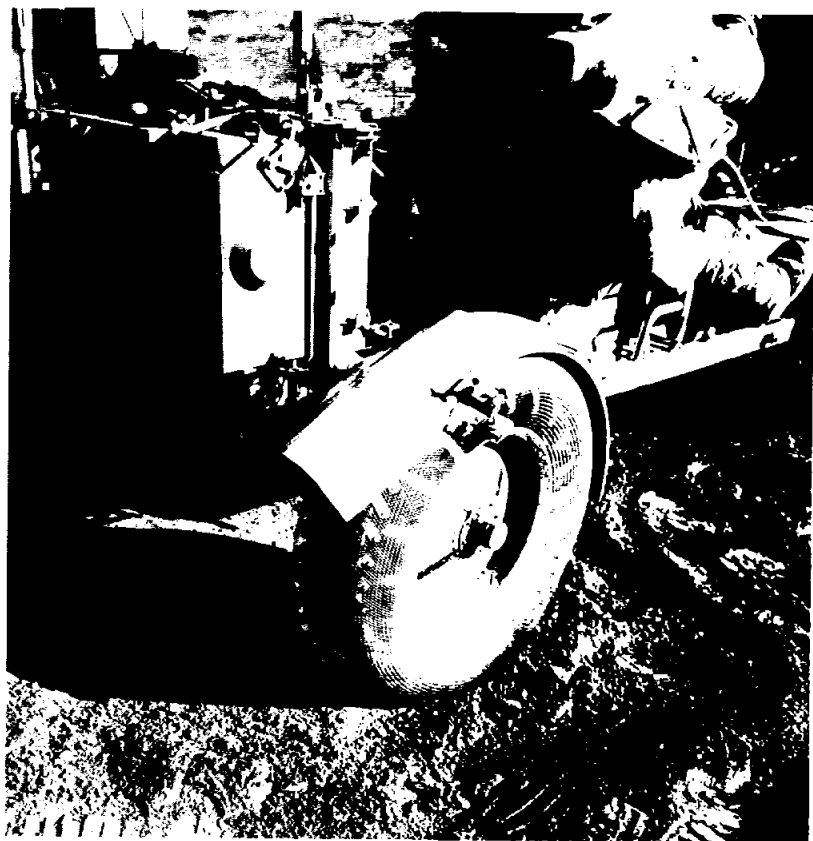
Second article to be produced under the NASA development is a 22-foot long, eight-foot, nine inch diameter aluminum test tank for storing liquified hydrogen.

The hydrogen test tank's 800-cubic foot capacity can accommodate 3,550 pounds of liquified hydrogen and is designed to keep the hydrogen at 423 degrees below zero F. with a minimum loss of fluid during a 180-day storage period in space.

The hydrogen test tank has now progressed through completion of the pressure vessel, installation of girth ring, suspension system and insulation and placement of outer shell. The tank presently is undergoing vacuum acquisition.

The completed NASA project is expected to demonstrate the feasibility of producing cryogenic tanks capable of storing large quantities of liquified oxygen and hydrogen in space environments for a six-month period.

Technology gained from development of the test tanks may be applicable to a wide variety of future space missions, such as space laboratory, station, tug and shuttle.



APOLLO 17 EVA PHOTO—A close-up view of the Lunar Roving Vehicle (top) at the Taurus-Littrow landing site; Note the makeshift repair arrangement on the right rear fender of the LRV; Schmitt (middle) is photographed seated in the LRV at Station 9 during EVA-3; Cernan (bottom) makes a short checkout of the lunar Roving Vehicle during the early part of EVA-1. This view of the "stripped down" Rover is prior to loadup.