Apollo 16 Home After Busy Trip

ROUNDUP

NASA MANNED SPACECRAFT CENTER HOUST

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Despite being cut one day short. Apollo 16 ended as gloriously as it started.

Its legacy is a wealth of scientific data that will tell man more about his very beginnings, perhaps something about his future.

Astronauts John W. Young. Thomas K. Mattingly and Charles Duke. In accomplished almost everything they set out to do even though they lest about 24 hours from their flight plan.

PROBLEMS

The change in schedule was made in deterence to a potentially faulty thrust vector control system on the service propulsion engine the rocket needed for the trip back home.

Because he experienced oscillations in the engine as he checked it out. Marringly called off the burn that would circularize his orbit at about 70 miles.

While he worked alone in the command module "Casper". Young and Duke lent moral support in he separated lunar module "Orlon."

The "go" for landing came almost six hours late, but the touch-down or the dusty, block-strewn Descartes was perfect.

TOUCHDOWN

"Old Orion is finally here, trouston!" Duke exclaimed at 8:23 p.m. CST April 20.

The journey to Descartes started more than four days earlier. Liftoff from Pad A of Launch Complex 39 at the Kennedy Space Center in Florida was right on time 11:54 a.m. Sunday April 16, 1972.

A little more than two and a half hours later, the crew performed the translunar injection burn that headed them toward the moon.

FLAKING LM

Paint flaking from the ascent stage of Orion, a lockup in Casper's navigation system, and a balky steerable antenna on Orion were other pesky difficulties encountered before the landing, but they proved far less worrisome than the thrust vector control situation.

But, once on the surface, Young and Duke turned their attention to exploration.

FIRST EVA

The first extra-vehicular activity, during which the lunar roving vehicle was assembled, the Apollo lunar surface experiments package (ALSEP) deployed, the United States flag raised and the solar wind composition experiment erected, lasted 7 hours and 11 minutes.

The rover logged 4.2 kilometers of lunar travel, and the explorers collected 41 pounds of rock and dust samples.

EVA Two lasted 12 minutes longer than the first, and sample

weight was exactly double. Rover travel was 11.5 kilometers.

CRYSTALLINE?

Young picked up a rock and made Earth-bound scientists perk up with "This is the first one I've seen I really believe is crystalling."

The pair also scooped up a special sample from under a lunar boulder.

The third and final surface exploration was the shortest—5 hours 40 minutes—but perhaps the most speciacular.

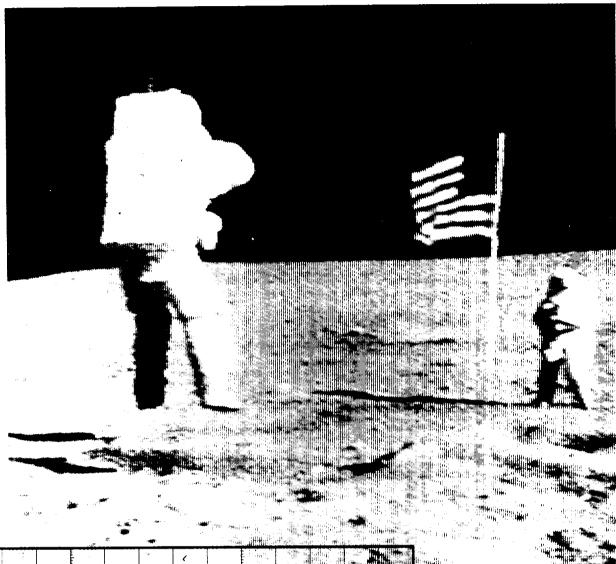
When they reached North Ray Crater, Young and Doke found it an awesome sight, three-quarters of a mile across and more than 200 yards deep, the general vicinity spotted with massive boulders.

HEAVYWEIGHT

Collected samples weighed about 90 pounds, bringing the three-day total to 212 to 214. Distance covered in the rover totalled 27.1 kilometers, about 16.8 miles. And time on the three EVAs added up to 20 hours 14 minutes.

Martingly, in Casper, was equally busy with his mapping

umy busy with his mappi (Continued On Page 3)



Target point Exit blackout Christmas Begin blackout Entry

Scientific Packages Working

Science from the moon suffered a few disappointments, but most of the instruments left behind by Apollo 16 are returning good data.

The Alsep heat-flow experiment was put out of commission when John Young accidentally pulled a wire loose, but the rest of the package is returning steady intormation.

The 24-hour-early ending to Aollo 16 meant moving the splash point from northwest to southeast of Christmas Island, but that presented no problems to crew or recovery team. Casper's passengers were as happy to get home as "Jumping Jack" Young was to get to the moon in the above picture photographed from a TV screen.

The scientific subsatellite was launched into a six-to-nine-month orbit rather than the pre-planned one year lifetime. This was a result of skipping a shaping burn by the spacecraft so as not to exercise the service propulsion system any more than necessary.

Radio contact with the subsatellite was achieved a fter Orion's batteries died — the science package and the LM use the same frequency.

T. Ballentine: Scientist And EEO Counsellor

(This is the first of a series of articles introducing the Center's Equal Employment Opportunity counselors. The function of the EEO counselors is to provide an open and sympathetic channel through which employees and applicants may raise questions, discuss grievances, and attempt to resolve, on an informal basis, discriminatoin complaints based upon race, color, religion, sex, or national origin.)

Thomas Ballentine is a physical scientist who tests materials for their physical, chemical, and mechanical characteristics in the Crew Systems Division, Engineering and Development Directorate.

He hails from Pulaski, Tennessee, where he finished Bridgeport High School (named for his grandfather) in 1942.

His college career at Tennessee A&I was interrupted by a 3-year tour in the Navy during World War II. After the war he attained



a baccaulerate degree in Chemistry at Morehouse College of Atlanta, Georgia. He received his masters degree from Atlanta Univers-

BALLENTINE ity in 1952.

He joined MSC in March 1964, when the work force was relocating from Houston to Clear Lake, as a chemist. He later was promoted to his present position of manager of the Materials Development Laboratory.

He directs testing and development of all nonmetallic items (plastics, fabrics, polymers, etc.) with which astronauts come in

Ballentine modestly feels he is not particularly equipped to be a counselor, but he is intensely interested in helping people of all groups (not necessarily minority) who feel they need someone to talk to in order to satisfy doubts and to resolve grievances.

Ballentine thinks a good counaids communications between management and potential complainants and he admits that his being black may have sharpened his senses to the possible existence of prejudice.

He shares the concern of most



managers in that minority group members and women have not attained their proportionate share of responsibility and authority in government.

The Ballentines reside at 3826 Julius Lane in Houston. Tom reads and "gardens" in his very little spare time. Also, he enjoys football, basketball, and baseball as a spectator.

He is married to the former Wilhelmina Thompson of Little ock, Arkansas. They have five children: daughter Tracy in college, son Troy in the eleventh grade, daughter Jill in the sixth grade, Roger in the fifth grade, and Bryant in the second grade.

Aero Club Starts Ground Schooling

The first session of the Aero Club's private-pilot ground school meets next Tuesday at 5 in Room 720 of Building 2.

Partially subsidized by the Employees Activities Association, the Aero Club is conducting the ground school for \$20.

The course also can be taken as part of the non-pilot introduction-to-flying program offered by

Registration will be held at the Tuesday session, or advanced registration can be done through Bob Moncsko, extension 4667.

Dinner-Theatre Specials Scheduled

Two NASA nights have been scheduled at the Dean Goss Dinner Theatre for the performance of "What's So Bad About Living With a Stranger?"

The regular \$8.50 tickets, which include the play and a buffet dinner, for the May 3 and 4 shows are available to MSC employees and contractors for \$6 each through Joanne Sanchez, extension 4303.

Job-Hunt Session Starts Thursday

That free-of-charge workshop to help the professional or technical person conduct an effective jobhunting campaign starts Thursday May 4 in Building 32.

Hours for the evening session, organized by the American Institute of Aeronautics and Astronautics with the support of other local technical societies, are 6:30 to 9:30.

The second of the three-part program will be held the following Thursday, May 11, the last one a week after that.

Reservations are being taken by telephone, 333-2865.

Soviets, US Okay **More Reports** On Joint Flight

The Soviet Academy of Sciences and the U.S. National Aeronautics and Space Administration have approved a second set of reports on compatible rendezvous and docking systems for manned spacecraft.

The joint working groups that generated the reports met last Nevember and December in Mos-

Purpose of those meetings was to define technical requirements for rendezvous and docking of United States and Russian space-

Compatible systems would permit emergency assistance as well as joint experiments.

However, no decision has been taken that commits either nation to a joint manned space mission with the other.

The first meeting of the joint working groups took place at MSC in June 1971.

The next—third—conference also will be held in the United States.

Contract Managers To Meet May 11

The fourth annual procurement conference of the National Contract Management Association is set for 9 a.m. Thursday May 11 at the Nassau Bay Motor Hotel.

Seven representatives of government and industry will present their views on the conference's three main topics: "Federal Procurement Principles," "Cost Accounting Standards" and "The Acquisition Process."

Contacts are Mike Ballas, extension 3803, and Jack Fuller, 5007.

JIMMY WARREN **MEMORIAL BOWLING LEAGUE**

Ball Busters	$73\frac{1}{2}$	46 1/2
Spoilers	70	50
Hertz	70	50
Chokers	$64\frac{1}{2}$	551/2
Fabricators	$63\frac{1}{2}$	561/2
Alley Oops	$62\frac{1}{2}$	571/2
Hexes*	61	55
Team 14	61	59
Bit Pickers	$59\frac{1}{2}$	601/2
Pin Pounders	59	61
Mixers	58	62
Achievers	$49\frac{1}{2}$	701/2
Splitters*	47	69
Left Overs	37	83
*Match postponed		
Hi team set 4-20: Hertz 2999		

Hi team set 4-20: Hertz 2999 Hi team game 4-20: Ball Busters

Hi individual set 4-20: Skillman, Bit Pickers, 694 and individual game Gierspeck, Fabricators, 255.

Individual scratch hi 4:20: Gierspeck 244 / 632, Skillman 619, Morgan, Alley Oops, 222/611 and Cooper, Mixers, 230/587.

Eleven Suggestors Earn \$1380 For Their Ideas

Eleven MSC employees have earned \$1380 for seven suggestions and one invention calculated to save the government time or money or both.

Largest of the awards went to a group of four: Nickolas L. Faust and Donald J. Jezewski of Mission Planning and Analysis, and David R. Glandorf and Harry L. Rozendaal of Lockheed Electronics Company. They split \$1000 for a new technique for development of space flight trajectories to extend existing optimization capability.

This Mother Earth

This Earth, this womb where we began, This mother's life gave birth to Man.

As children fed by dear green Earth Through all the dreams of human birth,

We did not breath. nor see, nor stir, But through the death of some of her.

So from our mother's breast we part To take this burden from her heart

And there in space ourselves to cast, To give her peace, due peace at last.

So now from out our cradle sprung, The Child of Man himself has flung.

In search of Grace his dreams now grasp The moon, the sun, the stars at last.

So much of Earth, so much of space! This Child of Earth, this Child of Grace

Will search until himself he finds And then to Earth he homeward winds.

For when our ships are cold and dark, We shall again to home embark

Like sailing ships from distant shore -Not parted long, ... at last to part no more.

> Thomas L. Wilson Flight Simulation Branch

Next-high was a \$125 award to Joyce K. Patterson of Financial Management, Administration and Finance Office. She suggested a "per diem rate chart" to cover all eventualities and eliminate the need for per diem claims to be computed for each individual trav-

An award of \$105 went to Robert F. Hall of Skylab Management Operations. His suggestion showed how to eliminate duplication of effort between two divisions concerning the procedure for requesting and statusing technical evaluations on a major contract.

An invention award of \$50 was presented to Richard S. Johnston, director of Life Sciences, for his fabric for micrometeoroid protection. He found a new fabrication method which eliminates hightemperature shorts along the stitches and seams of multi-layer protective garments.

Recipients of \$25 awards were John F. Herrmann of Apollo Program Control, Kenneth M. Ramke of Flight Support, E. Dee Sisson of Engineering Division, and Dwight L. Suiter of Apollo Test Division.

Herrmann suggested routine trimming of tree branches over sidewalks to avoid injury to pedes-

Ramke proposed installation of proper guards on rotary mowers or their replacement by reel mowers to reduce the possibility of injury to employees or visitors.

Sisson revised the form for entering daily time and attendance records to more closely coincide with the format of the official time and attendance cards.

Suiter suggested installing rollers on the guardrails of the upper floors in Building 30 to ease the handling of fire hose.

Howard Gibbons, PAO, Dead At 49

Howard Gibbons, Chief of Special Events in the Public Affairs Office, died April 20 of lung cancer. He was 49.

Gibbons, a veteran of the space program since Mercury, was among the first NASA arrivals in Houston when MSC was established.

He is survived by his wife, Mary Anne, sons James and Robert, and daughter Anne Claire.



The Roundup is an official publication of the National Aeronautics and Space Administration Manned Spacecraft Center, Houston, Texas, and is published every other Friday by the Public Affairs Office for MSC employees.

Photographer: A. "Pat" Patnesky

Roundup Swap-Shop

(Deadline for Swap-Shop classified ads is Thursday of the week preceding **Roundup** publication date. Ads are limited to MSC civil service employees and assigned military personnel. Maximum length is 20 words, including name, office code and home telephone number. Send ads, typed or legibly written, to **Roundup** Editor, AP3)

MISCELLANEOUS

New hoy's ice skates \$6. Sleeping bag \$5.

Golf cart \$2, pole lamp \$3, floor lamp table \$2, window fan \$2, steel ironing board \$2, 488-4005

Jacuzzi whirlpool bath, best offer. Clairol Kindness hair curlers plus other items. Lai, 483-6461.

Remington 552 BDL (Deluxe) auto .22 rifle, xint cndn, \$45, new cost \$60. Price,

471-3314
Large Sears cabin tent 10 x 18, external frame, floor, large windows, divider, canopy, case, orig \$215, now \$95. Kilbourn, 482-7879.
Gemeinhardt open-hole professional flute

S200. King b-flat cornet S125 Both xInt cndn. Cloweis. 471-2447.
Children's teys, xInt cndn: croqcet S2. ping pong S3. Gilbert chemistry S2, electric football S2, sled S2, electric auto racing S3.

air mattress \$3, canvas tent \$3 captains chair \$2, basketball hoop \$2, 488-4005. Kindness 20 instant hairdresser, xInt cndn, used less than year, \$8 Paulos, 473-7745.

Tent, Coleman Oasis super deluxe 10 x 16, used 8 times, xInt cndn, \$100. Glynn, 488-4453

Electric trolling motor, foot control lazitrol electric will mounting bracket, new \$169. 95. Best offer, Glynn, 488-4453.

Complete set used McGregor Tourney golf clubs, irons 2-9 & wedges, woods 1-4, also set used Wilson X-31 irons. Reasonable. Smith, 333-4761.

Deer hunters: father/son lease, 1350 acres Menard County, deer, quail, turkey, house/elec/water, \$255. Franklin, 334-2853.

3 a' AC grade plywood, approx 400 sq ft, \$30, 488-4005.

Metal high chair \$5, large standing chalk-board \$3, 2 lamps \$5 ea. Lapko, 946-4311.
Rollei 35mm camera, smallest made that takes full-size slides, spotless wi/case, flash & shade. Pearce, 747-3646.

4-ton room air conditioning unit, new, still in crate. Rosenbaum, 474-4386.

Free pine logs cut 2' & 3 ' Ingth. Statz, 482-7607.

WANTED

Trailer or trailer fhassis suitable for 50 x 72 inch bed. McCown, 471-0716.

Drake RB4, T4X, power supply, Collins 32S-3, 75S-3B, 519F-2 power supply, Smith, 334-3396, 406 Bayou View Dr., Seabrook, Dehumidifier in good ondn. Becker, 643-4451

Formal dining rm suite, table 6/chairs, china. Smith, 334-3396.

Small cement mixer. Bristow. 485-2219. Vice for home workshop, prefer 3 or 4' jaw. Rosenbaum, 474-4386.

PROPERTY & RENTALS

Beach front corner lot (second line). Terramar Beach, West Galveston Island, all utilities, \$9500. Holt, 488-5117.

Rent. large park with food, drinks, entertainment etc. furnished, one day only (September 23), price - one ticket to MSC Picnic.

Half acre lot 125' on shell street, Houston, bank/school/3 churches within 8 blocks, \$3500. Barr, 549:1751.

Rent: 2 new townhouses CLC, all elec. 2 bdrm 2 bath. Miller, 488-0621 after 4.

CLC 3-2-2 across from school, playground, pool, fenced, living/dining, paneled den, builtins, equity. Christopher, 488-2774.

3br-bath-liv.-kit din, builtins, central heat, 2a/c units, detached garage, on 100 x 130 wooded loc. Shoreacres, LuPorte, avail immed \$17,000 Schnell, 471-2378.

HOUSEHOLD ARTICLES

2 wrought iron tables wilglass tops, gd cndn, \$10 ea 438-4005.

Metal wheel barrow, rubber tire, \$9, 16' wood extension ladder, gd cndn, \$10, 488-4005.

Fedders 14,000 BTU air conditioner \$100. Maytag electronic dryer \$100. Lawnmower \$25. Gremillion, 479-6872. 8 large rectangular cushions wi zipper

covers \$2 ea. Straight-back wood chair \$2.488-4005.

Spinet piano, pft codn, walnut cabinet.

Spinet piano, pft cndn, walnut cabinet, warranty & guarantee in effect, \$325. Frank, 471-2848.

King-size Beautyrest firm mattress & box spring. Iike new, \$150 Maple veneer bedroom set, dbl bookcase bed, dbl dresser w-mirror, chest, vry gd cndn, \$150, 334-3350 Wrought iron dinette, marbelized Formica top, 4 chairs, \$50, 488-4005

SeaArama Tickets

SeaArama tickets, good through the month of May, are available now from Employees Activities Association representatives. Adult tickets are \$2, children \$1, a saving of 95 cents in each case. Kids under 5 get in free. Vacuum cleaner wi/all attachments, hose connection needs repair, \$10. Portable electric fan unit \$5, 488-4905.

Early American bookcase bed & mattress \$60. Early American dresser \$50. Ralistic component AM/FM steree & turntable \$100.

Portable 18" Silvertone b&w TV, 6 yr old, xln; cridn, \$40. Sullivan, 488-0337.

Redwood picnic table, 2 benches, \$5, 488-4005.

Chair, green upho!stered colonial swivel rocker S15, 488-4005.

70 GE 12" Portacolor TV wi/clock & timer, very gd cndn, \$120. Jaderlund. 334-1406.

1406. RCA solid state portable stereo, great

sound, \$50. Jaderlund, 334-1406.

Antique player piano, player portion completely rebuilt, wood-grained antique finish, \$325. Brandon, 944-0227.

Italian Provincial beige sofa and end table, S50 both. Gaffney, 483-4319.

AKC black & silver German shepherd puppies, wormed, males \$60, female \$50. Watts, 487-4275.

Free dachshund-beagle male, 3-mo-old, also dachshund-poodle adult female. Boykin, 334-1267.

Bay mare wi/Western saddle & bridle. \$175. Weldon, 554-3990. Kittens, half-Burmese half Persian, 6-wk-

Kittens, half-Burmese half Persian, 6-Wkold, free to good home. Kupiak, 938-4583 after 4. Big Reds: Irish setters born Mar 10, 2 pedi-

grees AKC & Field, national champ line. Morris, 333-2910. Cocker spaniels, AKC, red & bcff, male &

females, \$75. Boin, 488-1244.

Accepting applications AKC Samoyed pups, sire American & Canadian champ, sire & bitch both of Karatyll's Kennel. Bazhaw.

VEHICLES

71 Olds Cutless Supreme, 350 cu in engine, air, radio, auto. 2 dr. bucket seats. console, gr tires. Coan. 488-6534.

Girls Sears Spyder bicycle, xint cndn.
Robertson, 488-2897

Robertson, 488-2897. 71 Honda CB 350 K3, 1200 mi, luggage rack, adjustable backrest, mirrors, \$750.

Reeves, 482-7233.

68 Pontiac LeMans 4 dr hdtp, air, power, radio, xint cridn, blue. McGhee, 469-7715.

67 Ford LTD 2 dr hdtp, power and air. Stephenson, 471-4694. 68 Honda 50, new rings, needs minor

adjustment, helmet incl, \$55. Boys 3-spd bicycle \$25. Truman, 482-7042. 67 Mercury Montclair, A-1 cndn, loaded.

\$1000. Vogt. 488-4069.
72 Ford Mustang, pwr steer, air, auto, radio, heat, \$200 & take up notes. Must

sell. 333-2491 after 5. 67 Plymouth Barracuda, xint car, V8. auto, fctory air, radio, pwr steer, 5 xlnt tires,

Girls 3-spd 20-in spyder bike w/basket & hand brakes, xInt cndn, \$30. Shapiro, 488-4276.

66 Plymouth Sport Fury 2-dr hdtp, all pwr & air, bucket seats, console floor shift, auto, 383, 2-bbl carb, \$695. Morton, 946-4752.

66 Dodge pickup ½-ton, custom cab, Fleetside bed, radio & heater, std trans. slant 6, \$345. Morton, 946-4752.

Boys 26-in 3-spd bike, very good cndn, \$20. Wilson, 334-1895,

60 VW, gd body, new tires & battery, engine needs repair, \$100. McCaulley, 471-3298. Holiday Rambler 27' trailer, 1968, lk new cndn, air & extras. Becker. 643-4151.

65 VW, 50,000 mi, xInt cndn, \$600. Holder, 471-2744.

69 Mercury Marquis 4-dr hdtp, air, vinyl top & seats, compare at \$2500, must sell \$2200. Russell, 477-6393.

13' Shasta Compact Travel trailer, 2 yr ol. icebox. gas stove wi/oven, electric brakes. S1000 firm. Frohbieter, 481-3551.

71 Honda CL 350, blue wi/windshield & 2 helmets, \$650. Wolz, 554-3418.

Trailer-tent camper, pop-up hard top, vinyl covered nylon, sleeps 4, \$300. Weary, 334-1181.

62 VW, xint mech cndn, recent eng overhaul, gd tires, body & paint, Faget, 534-

New 71 650 Yamaha front wheel assembly, complete. Make offer. Miller, 481-3237.

67 Chevrolet sta wgn, auto, air, r/h, pwr steer, xInt mech cndn. 2 new tires, \$1150. Girala, 921-7212.

BOATS

5hp ESKA wi $/3V_2$ gal tank, xInt ondn, \$70. Lapko, 946-4311.

Wooden Lightning sailboat wi/3 sails, new trailer, \$950. Schiesser, 482-3217. Fiberglas Sunfish sailboat with trailer,

xInt cndn, S350. Schmitt, 337-3259. 21' Southcoast sailboat wi/working sails and 5hn ohm. \$1800. Hill. 332-3838.

18' plywood boat, 75hp Johnson, ideal for jetty fishing, skling, many extras, \$950. Kubiak, 938-4583.

LATE ENTRIES

Baby playpen. Casco, nylon mesh, xint cndn, \$10. Hill, 332-3838.

Two alumuinum folding beds $wi/1V_2$ " foam mattresses, ideal for camping, new last summer, \$7 ea. Bentley, 333-3001.

64 Chevrolet Impala, new 327 engine, 3spd floor shift, radio, heat, oil & amp gauges. Suggs, 644-4631 after 5. Want late model Honda CB-100. Stonesifer.

482-7643.

Want to rent 3 or 3 br house, prefer fenced back yard, priced reasonable in League City, Webster, or Dickinson area. Wilton, 332-3846 after 5:30.



FISH STORY — Bill Shropshire of Technical Services Division pulled this 63/4 pound bass out of the water at Toledo Bend to become a member of the "Lunker Bass Club" at Lowe's Creek Park (Lunkers have landed bass weighing six or more pounds). Bill figures this picture will make believers of the doubters, and he graciously offers his services as a 'lunker instructor.'



PRETTY SMART — Proving beauty and brains do go together, 16-year-old Kathy Jackson demonstrates the "quantitative measure of motor-sensory performance during prolonged in-flight zero-G" experiment that gave her one of 25 final spots in the nationwide Skylab Student Project. Kathy is the daughter of John Jackson of Crew Systems Division, and is a student at Clear Creek High School. More than 3400 entries were submitted by school students in the search for scientific and technological projects that would directly involve some of the nation's young people in space program.

Apollo 16 —

(Continued From Page 1) ule, Orion was turned loose. It immediately started a slow tumbling. The trouble was an improperly positioned circuit breaker.

The subsatellite, with its scientific equipment, was injected into lunar orbit, but no immediate radio contact could be made with it since its operating frequency was the same as the lunar module's.

Without attitude control, the LM ascent stage could not be impacted onto the moon as planned. It is expected to fall from orbit on its own in about 200 days.

Apollo 16 headed home at 8:27 Monday evening. When the craft

Disney Discounts

"Disney on Parade" discount coupons are available from Employees Activities Association representatives. The show is May 9-14 at Sam Houston Coliseum, and the coupons knock a dollar off the regular \$5, \$4 or \$3 tickets.

rounded the moon and radio contract was reestablished after the cameras and scientific instruments

After lunar liftoff, televised by the remotely controlled camera on the rover, and rendezvous and docking with the command modtrans-earth injection burn, Mattingly reported that "morale around here just went up a couple hundred per cent."

Apparently the thrust vector control problem had not been forgotten.

On the homeward leg. Mattingly got his own chance to conduct EVA. He spent a bit more than an hour outside the spacecraft, retrieving film from the scientific insrtument module and activating the microbial response experiment

With splashdown in the Pacific some 175 miles southeast of Christmas Island, Apollo 16 became history. Only one manned flight to the moon remains on the schedule.

Young, Mattingly and Duke are due to return to Houston tomorrow evening at 8:45.

Cost Reduction Corner

The 95 Government-owned punched card machines around MSC require periodic maintenance, provided by the equipment manufacturer. Cost over the past eight months: \$36,180.

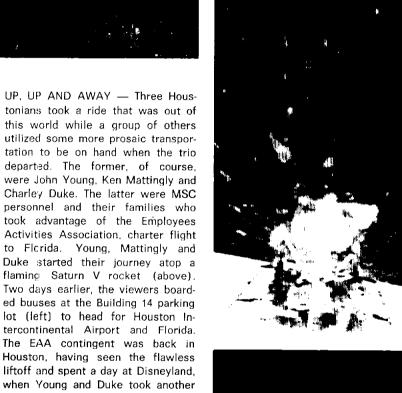
Last month, a local third-party vendor of maintenance services took over the job, providing the same services at an eight-month cost

Hugh O. Wallace of Computer Operations Office reported the changed method and points out the saving to John Q. Taxpayer is \$9,507 for the period covered.





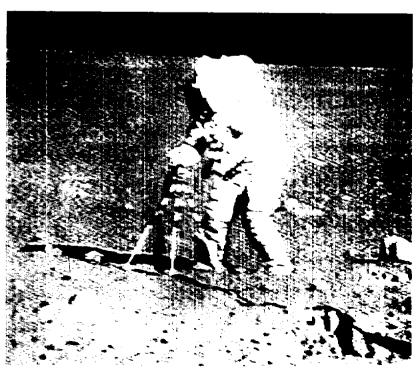




trip. This time it was in the lunar module Orion, first down to the moon's surface, then (right) up to rejoin Mattingly in the command module Casper. Once Apollo 16's launch sounds and sights disappeared, the liftoff audience joined everyone else — including the mission controllers (below left) — whose visual contact with the travellers was via the TV tube. That picture on the Mission Operations Control Room wall screen is of Earth from 8300 miles away. That shot also was seen on home TV screens as was the one below of Young setting up the lunar portable magnetometer during the first of three lunar extravehicular

activities.





 ${\rm \dot{g}}(U,S)$ Government printing office: 1972—779-285/93473