

Apollo X Prime Crew

Cernan Young Stafford

## Stafford, Young, Cernan Named Apollo X Crew

Astronauts Thomas P. Stafford, John W. Young and Eugene A. Cernan have been assigned as prime crewmen for the Apollo X mission, scheduled for the second quarter of 1969.

Apollo X is planned as the second manned flight of the lunar module. The mission possibilities for Apollo X range from Earth orbital operations to a lunar orbit flight.

The backup crew consists of Astronauts L. Gordon Cooper, Donn F. Eisele and Edgar D. Mitchell. Flight crew support team members are Astronauts Joe H. Engle, James B. Irwin and Charles M. Duke, Jr.

The crew is training for a lunar orbit mission in which the complete Apollo spacecraft—command and service modules and the lunar module—will be flown. However, if an earlier Apollo mission must be repeated or plans are changed, the crew will be prepared for the complete range of Apollo missions.

Apollo X will be launched by a Saturn V into low Earth orbit. In the case of the most forward mission, at the end of the second or third orbit, the third stage of the Saturn V will be reignited to place the space vehicle on a trajectory to the Moon. The command and service module will separate from the third stage and the spacecraft lunar module adapter panels will be jettisoned.

The command and service module then will dock with the

lunar module and extract it from the rocket stage. The combined spacecraft modules will continue to the Moon and enter an orbit around the Moon.

Spacecraft Commander Stafford and Lunar Module Pilot Cernan will enter the lunar module, detach it from the command and service modules, descend to approximately 50,000 feet above the Moon's surface, then return to the orbiting command and service module. The lunar module will be left in orbit around the Moon and the crew will return to Earth in the command module.

The Apollo X prime crew served as the backup crew for Apollo VII.

Stafford, 38, an Air Force colonel, was the pilot of Gemini 6 in December, 1965, and the command pilot of Gemini IX in June, 1966. He has logged more than 98 hours of spaceflight.

Young, 38, is a Navy commander. He was the pilot of Gemini III, the first manned flight in that program in March, 1965, and he was the command pilot of Gemini X in July, 1966. He has more than 75½ hours of spaceflight.

Cernan, 34, a Navy commander, flew with Stafford in Gemini IX, during which he became the second American to "walk in space." His spaceflight time totals more than 72 hours.

(Continued on page 2)

## Experiments Selected For First Lunar Landing

Plans now call for the first United States astronauts to land on the moon next year to place three scientific experiments on the lunar surface in addition to carrying out their primary tasks of photography and collecting samples of the lunar soil and rocks which will be returned to earth for detailed scientific analysis.

The National Aeronautics and Space Administration is in the process of planning the detailed tasks to be performed by the astronauts. The planning is based on the desire to obtain the maximum scientific return consistent with the primary purpose of the first manned lunar landing mission.

Primary objective of the mission is to prove out the Apollo system by achieving a successful moon landing and safe return to earth.

During the first landing, plans call for the astronauts to leave the spacecraft and spend up to three hours on the moon's surface. During this time they will make observations and photograph the area in the vicinity of the landed spacecraft in addition to collecting the samples and deploying the experiments.

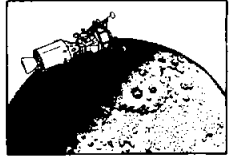
The astronauts will perform their tasks in an order of increasing complexity. At each level of activity, scientific and medical data on the expenditure of energy by the astronauts will be obtained. This will insure adequate monitoring of their ability to perform in the vacuum, extreme temperature and one-sixth gravity of the moon and will provide important data which will permit the planning of longer and more complex missions for the future.

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# ROUNDUP

NASA MANNED SPACECRAFT CENTER

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DEC. 21 LAUNCH—

## Apollo VIII Scheduled For Orbital Flight Around Moon

NASA last week announced that the Apollo VIII mission would be prepared for an orbital flight around the Moon.

This decision was reached following a thorough review of the Apollo Program and NASA's overall readiness to undertake the next step toward the national objective of a manned lunar landing next year.

Apollo VIII will be launched from Cape Kennedy no earlier than December 21. Timing of the "launch window" is solely dependent on technical considerations. Among these are the Moon's monthly swing around the Earth, launch restrictions at Cape Kennedy, daylight conditions in the launch and recovery areas, and preferred photographic lighting for sites of interest on the Moon.

Crewmen for the Apollo VIII mission are commander Frank Borman, command module pilot James A. Lovell, Jr., and lunar module pilot William A. Anders. There will be no lunar module on this mission, but Anders will fly in the position reserved for the lunar module pilot on fully configured Apollo missions.

The Apollo VIII mission will be an "open-ended" mission conducted in steps referred to as "plateaus" or "commit points." Conducting the mission in this manner provides both maximum crew safety and maximum benefit through alternate flight mission selection as the flight proceeds.

Each plateau includes a thorough check of crew, system and equipment operations. Only when all conditions are satisfactory will the decision be made to commit to the next plateau. The commit points in the Apollo VIII mission are:

- Prelaunch checkout, terminating in launch.
- Earth parking orbit, which ends with translunar injection.
- Translunar coast, preceding lunar orbit insertion.

Conducting Apollo VIII in this manner provides for various alternate missions, which include a low Earth orbit flight, a high apogee mission up to 60,000 miles, or a circumlunar operation.

Launch will be from Complex 39A at Kennedy Space Center on an easterly azimuth between 72 and 108 degrees. The Saturn V launch vehicle will place the spacecraft and the SIVB third stage into a 115-statute-mile high parking orbit around the Earth during which third stage and spacecraft checkout will be accomplished.

The third stage will then be reignited during the second or third parking orbit to inject the space vehicle into a translunar trajectory. The injection will



Ten Times Around

MEET THE PRESS—Apollo VIII Command Frank Borman uses sketch to describe upcoming lunar orbit mission to newsmen during a recent press conference at MSC. Borman, Command Module Pilot James Lovell and Lunar Module Pilot William Anders spent an hour describing the mission and answering queries from newsmen on November 16.

provide a circumlunar "free return" to Earth if the decision is later made not to insert the spacecraft into lunar orbit.

Within two hours after translunar injection, the command and service module will separate from the rocket's third stage. Midcourse corrections may be made using the spacecraft's reaction control system. The translunar coast will take about 66 hours from Earth orbit to the Moon.

At translunar injection from Earth orbit the spacecraft speed will be increased from approximately 17,500 to about 24,200 miles per hour. During coast to the Moon, the speed will decrease to about 2,120 mph when the spacecraft is about 30,000 miles from the Moon. At this point lunar gravity will cause the spacecraft to accelerate as it approaches the Moon.

The spacecraft service propulsion system will be used to slow the spacecraft from about 5,700 mph to 3,720 mph, inserting it into a 196 by 70 statute mile lunar orbit. Approximately two revolutions later the system will be fired again to circularize the orbit at 70 statute miles above the surface of the Moon.

Crew activities during lunar orbit will include navigation and landmark sightings and photography. After ten trips around the Moon (each orbit lasting about two hours) the service propulsion system will be fired again to boost the spacecraft out of lunar orbit onto a trans-Earth trajectory. The return flight from the Moon to Earth will take about 57 hours.

Prior to reentry into the Earth's atmosphere, the command module will be separated

from the service module using the latter's reaction control system. Elapsed time from launch to landing in the Pacific Ocean will be about six days.

The decision to fly the lunar orbit mission followed a full review of the readiness of the hardware, crew and support systems by Dr. Thomas O. Paine, Acting Administrator of NASA.

The intensive review process has been underway since Aug. 19, when NASA announced that Lunar Module (LM) operations would be rescheduled from Apollo VIII to Apollo IX because LM 3 had been delayed in checkout. LM 3 will now be flown next year on the fourth Saturn V (AS 504), which will be the first manned flight of the LM and third manned mission for the command and service modules.

In the announcement, Samuel C. Phillips, Apollo Program Director, said the purpose of the change in the flight schedule was to permit the program to make the maximum progress with the Apollo-Saturn space system, while working out all problems encountered in the LM 3 checkout.

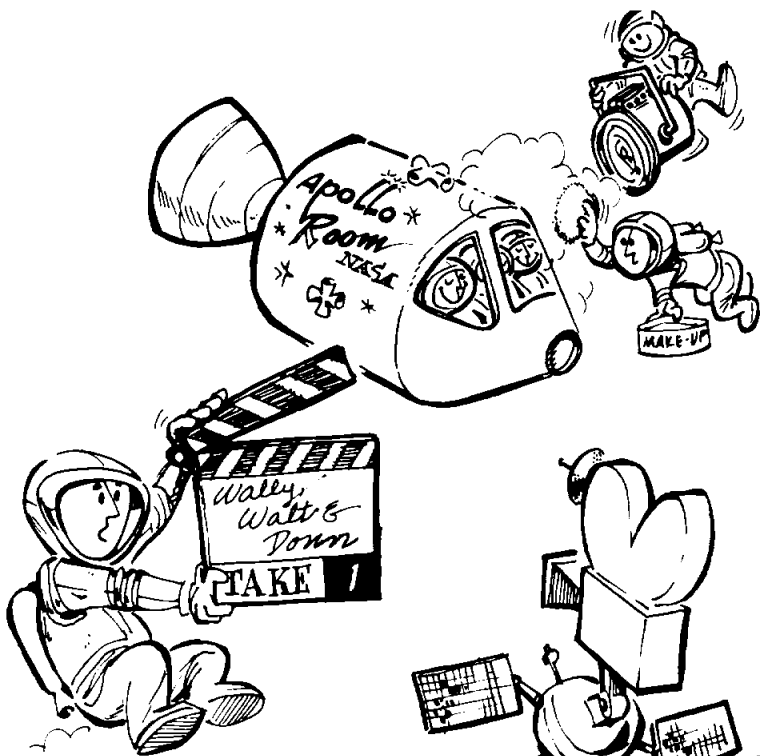
He said in the August 9 announcement that the Apollo VIII flight would be prepared as an Earth orbital mission, but that training and planning would include the possibility of a high Earth orbit, circumlunar or lunar orbit mission.

In recommending the selection of the lunar orbit mission for Apollo VIII, Dr. George R. Mueller, Associate Administrator for Manned Space Flight, told Paine that it would advance the Apollo Program by:

(Continued on page 4)

### THE ASTRONUTS

(filched from TRW Systems Group)



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### Apollo X Crew Named

(Continued from page 1)

Cooper, 41, an Air Force colonel, commands the backup crew. One of the original seven United States astronauts, he flew the last mission in the Mercury Program, MA-9, in May, 1963, and he was command pilot of Gemini V in August, 1965. He has more than 225 hours in space.

Eisele, 38, is an Air Force lieutenant colonel. He was command module pilot on the 11-day Apollo VII flight last month. He has the same assignment on the Apollo X backup crew.

Mitchell, 38, a Navy commander, has not yet flown in space. Prior to his assignment as backup LM pilot for Apollo X, he was a member of the astro-

naut support team for Apollo VIII.

None of the Apollo X support team has flown in a spacecraft, although Engle, 36, has earned Air Force astronaut wings by piloting the X-15 experimental rocket aircraft to an altitude of more than 50 miles. Major Engle was a test pilot in the X-15 program prior to becoming a NASA astronaut.

Irwin, 38, an Air Force lieutenant colonel, participated in several altitude chamber tests which helped qualify the LM for manned flight.

Duke, 33, is an Air Force major. He has had technical responsibilities in launch vehicle and crew safety areas.

### MSC's Lunney Receives High NASA Award

Glynn S. Lunney, Apollo VII prime flight director, was among 20 persons to receive the NASA Exceptional Service Medal last week in Washington, D.C.

Lunney received his award from Dr. Thomas O. Paine, Acting NASA Administrator, during the annual awards ceremony on Nov. 15. Principal speaker was the Hon. Alexander H. Flax, Assistant Secretary of the Air Force for Research and Development who was also the recipient of the NASA Distinguished Service Medal for his contributions to the USAF and the NASA in the field of research and development.

Thirty-nine individuals and six groups were presented medals and certificates. Group Achievement Awards went to the Apollo VII Flight Operations Team, Instrumentation Ships Team, Occulation Experiment Team, OGO Project Team, Sonic Boom Investigation Team and Surveyor Team.

### Xmas Party Dec. 14 For MSC Children

The EAA-sponsored MSC Childrens Christmas Party will be held December 14 from 1 to 3 p.m., beginning with the arrival from somewhere north of here of Mr. and Mrs. Santa Claus at the Auditorium. The Clauses will conduct individual counseling sessions with each child to determine his unsuppressed desires regarding what he expects to discover under the tree on the morning of the 25th.

Two cartoon films - "The Littlest Angel" and "Santa Claus, Punch and Judy and Howdy Doody's Christmas". Also TV's Cadet Don.

Gifts and favors will be distributed as the children leave the Auditorium.

Children from 2 to 12 are invited. One parent may accompany a child under 5; all others should leave their children at the Auditorium and pick them up at the Auditorium at 3 p.m.

Tickets which sell for 50c are available from the following persons/building/extension: Martha Caballero, 4, 2421; Edi Quinn, 4, 5558; Ron Hayes, 2, 3901; Charles Wilson, 15, 4455; Susan Golden, 30, 5126; David Bell, 16, 3286; Lecie Scott, 419, 2473; and Cookie Underwood, 212, 7267.

Party chairman is Helen Ragsdale, ext. 3885.

### Co-Op of Month



RECOGNITION OF EXCELLENT PERFORMANCE—Wallace T. Tuthill of Propulsion and Power Division's Thermochemical Test Branch received recognition for his design and related work in the Thermochemical Test Area.

### CSD Collects Gifts For So. Vietnam Kids

Crew Systems Division collected more than 247 lbs of clothing and toys for distribution to children in South Vietnam.

The donations were the result of a plea from Sp 4/Thomasa E. Lowe, Jr., stationed with an Army artillery unit outside of Saigon. Lowe is the son of Mrs. Joyce Lowe who works in the Environmental Control Systems Branch of CSD.

Mrs. Lowe's son suggested that a "Christmas project" by MSC "would make alot of children very happy who otherwise will have nothing except grief of a war torn land."

Personnel of CSD responded quickly and admirably with enough gift items to fill 15 boxes. The boxes were mailed to San Diego where they were placed aboard a special Vietnam bound Navy ship.

## Your Job in Focus

### Health Plan Changes

Benefit changes (most of them minor) will be made in many of the health benefit plans, and many plans will increase their premiums for the contract term which begins in January 1969. To inform you of the changes, if any, in your plan, the Civil Service Commission has prepared pamphlet BRI 41-117. Information About Plan Changes. Effective January 1969, which will be distributed to all employees around the end of the year. Check the information in the pamphlet regarding your plan to see if it is making any changes, and, if so, in what respect. Keep the BRI 41-117 with your brochure.

If the premium of your plan is being increased, the effective date for the increased deductions from your salary will be January 12, 1969. Rate increases are necessary primarily because of increasing costs of hospital and medical care and, in some plans, because of needed improvements in benefits.

Under the Federal Employees Health Benefits Regulations, open seasons must be held at least once every 3 years. The last open season was held in November 1966, and the next open season will be held during the period November 10 to 28, 1969. There will not be an open season in 1968. The 1969 open season will apply to employees only; it will not apply to annuitants.

### Changes in Merit Promotion Program

The Civil Service Commission has issued new regulations covering promotions in the Federal service. The regulations were developed after careful consideration of the views of employee organizations and Federal Agencies and are designed to assure equitable con-

sideration of employees qualified for promotion and to strengthen employee confidence in the fairness of promotion procedures.

The new regulations place emphasis on:

- Giving all employees the chance to receive full consideration for promotion.

- Using the most effective rating methods to identify highly qualified candidates, with written tests used only when approved by the Commission.

- Eliminating all forms of discrimination or personal favoritism.

- Keeping employees well informed about the program and their promotion opportunities.

Federal Agencies are expected to conform to the new policies as soon as possible. The first stage of implementation—the revision of Agency-level policies and the issuance of governing instructions to installations—must be completed by January 1, 1969. The second stage—the revision of all specific promotion plans and detailed procedures—must be completed by July 1, 1969. This schedule provides time for Agencies to determine the chances necessary in their present promotion programs and to consult with employee organizations prior to issuing revised promotion plans.

### Bay Area Chorus To Present Concert

The Bay Area Chorus, accompanied by members of the Houston Symphony Orchestra, will once again present a concert for all NASA employees and contractors and their guests. The free concert will be on Sunday, December 15, at 8:30 p.m. in the NASA Auditorium.

### 25 Years Service



Clay Bryant  
RASPO—Downey

### Second Pecan Harvest Scheduled for Employees

A second harvest of pecans is scheduled for November 23.

The pecans will go on a first-come, first-serve basis beginning at 9 A.M. Paper bags, which will hold about eight pounds, will be distributed on the basis of one bag per family.

The pecan orchard is in the triangle between Fifth Street, Avenue B and NASA Road 1. Parking will be on Ave B.

# your cup runneth over



## with a good SUGGESTION

AWARDS AND COST REDUCTION PROGRAM

# Roundup Swap-Shop

(Deadline for Swap-Shop classified ads is the Friday preceding Round up publication date. Ads received after the deadline will be run in the next following issue. 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 in writing to Roundup Editor, AP3. Ads will not be repeated unless requested.)

**FOR SALE/RENT—REAL ESTATE**

For rent: 3-2-2 brick, central air/heat, 3 miles from site, fenced backyard. Available Dec. 6, 1968. Call Young, 932-5102.  
3-2-2 brick in Friendswood, trees, fenced, 2000 sq. ft., 6 1/2% loan, \$161/mo. Bond, HU 2-7852.

**FOR SALE—AUTOS**

63 Oldsmobile "98", 4-door, air, all power. New muffler, pipes and shocks. Perfect condition \$1100. B. Darby, 488-1581.  
63 Cadillac, 4-door, air, power windows, seats, etc., electronic headlight dimmer, new tires and exhaust system. Just like new. \$1450. B. Darby, 488-1581.  
63 Rambler 660 Classic, 4-door, straight 6 standard shift (22 mi to gallon), reclining seats, makes into bed. \$460 (under retail). Barbara Matelski, 944-1280 (after 5).  
Merlyn Mk IV, C sports racing class, tube chassis, Hewland 5-speed transaxle, Holbay 109E Ford dry sump engine, spares, trailer. J. Hirasaki, 591-3779.  
Ford F250 pickup bed—good condition with factory bumper, \$100; 1958 Renault, \$75; camper intercom, \$25. 944-4817.  
65 Mustang hardtop, V8, radio, factory air, power steering, automatic transmission. Very clean. \$1200. Dave Friis, 944-5000.  
60 Chrysler Imperial, \$375. Peters, 534-5661.

67 Plymouth Belvedere 4-door, white with black vinyl top, many extras. Good condition, 40,000 miles, \$1800. George Carlisle, 932-2836 after 5.  
59 Austin Healey 100-6 blue roadster, new tires, front shocks, top, and tonneau. Leo Peters, RI 7-4372.  
66 Buick Special Deluxe, power, air, auto/trans, radio, good tires, excellent condition, many extras, \$1450, Edi Quinn, OV 6-2958.  
67 Toyota 4-door white, blue interior, radio, and air, 20K miles, \$1295. Dutch, 591-4163.  
65 Mustang 2+2, 50,000 miles, 289 V-8 power steering, 4-speed, \$1,300, 591-2571, Balboa Apts. Nassau Bay.  
65 Ford Fairlane Station Wagon, 50,000 miles, radio, air, auto/trans, \$950; 1966 Volkswagen sedan, 30,000 miles, \$1175. D. C. Cheatham, 877-1201.  
61 Ford Galaxie 4-door, power steering, automatic, V-8, 53,000 actual miles, new tires. Very good condition. \$500. Dale Denais, HU 3-2891.

66 Bonneville, power, air, good condition. Make offer. Gary Walker, 944-3368.  
66 Chevrolet Malibu sport coupe, blue, air, stereo tape, std. transmission, 283 V-8, 28,000 miles, excellent condition, \$1895. H. Hart, Galveston SO 2-5550.  
62 Ford Galaxie "500" 4-door, radio, heater, good work car, \$400, N. Jervas, MI 4-5832.  
66 Mustang Fastback GT, 4 speed, air, disk brakes, 5 new wide ovals and mags, \$1650, Charles Krpec, MI 5-6089.  
66 Thunderbird convertible, excellent condition. Stereo tape. Air, all power, AM/FM radio. Price: \$2200. 427-4477, 422-5709.  
68 Impala sports sedan, full power, air, 327 engine, Turbohydramatic, AM/FM. Paul Weitz, 591-3071.  
67 Cougar XR-7. Factory air, power steering, tilt wheel, leather and vinyl interior, AM/FM radio. \$2350. Cliff Bean, HU 3-5898.  
Volkswagen, good condition, \$425. A. Schmitt, 534-5207 in Dickinson.

65 Galaxie 500, 36,000 mi., one owner, pwr steer, factory air, radio, 390 cu. in., Cruiseomatic. 946-1339 after 5 pm.  
68 Corvette Stingray convertible, blue-white top, 327, air cond, auto trans, radial tires, positraction, AM/FM. Jerre Cobb, 591-3516.  
64 Corvair Monza Coupe, radio, air conditioning, automatic transmission, "Big" 110 hp engine, Louis Ramon, 488-1238.  
66 Pontiac Catalina wagon 6 passenger, air, automatic trans, new tires, brakes, battery, below average retail, \$2100. R. H. Kohrs, MI 5-0478.  
Jeep-4 wheel drive, new motor, paint, good tires, removable top, reasonable, 499-2162.

66 Ford pickup, very good condition, \$1200. 68 Ford Torino, like new, standard. Take up payments, Davis, 932-4671.

66 Olds Delta 88, 4-dr hardtop, fully equipped, 48,000 miles, one owner, excellent condition. C. Kraft, HU 2-7357.

68 Dodge G.T.V-8, 318 hp, power steering, air, convertible, wide ovals, racing metallic green, take up payments \$98/mo. Call Trimsley, ext. 2840 (no home phone).

68 Chevy Imp. custom automatic, air, power st., power brakes, white with black vinyl top. Price \$2875 or best offer, B. Samuel 733-8905.

64 Buick Wildcat conv., excellent condition. Reason for sale: ordered new buick. Jim Nelson, 932-2498.

67 Mustang 2+2 power steering radio, heater, automatic trans. sport deck radial tires, 24,000 miles, \$1900, Gary, 474-3918.

62 Olds 88 convertible, power and air, good shape, \$450. H. E. King, HU 8-5045.

62 Oldsmobile, holiday coupe, air, power steering and brakes. Two-tone, one owner. \$600, Doris Reid, 483-5268 (no home phone).

**MISCELLANEOUS**

Fireplace and barbecue wood for sale. Custom cut. It is aged, post oak wood. \$28 1/2 cord, \$56 full cord. Call S. Gallamore or Mr. Weiss, GR 2-2737.

15' fiberglass, 40-hp electric, trailer, \$375. Guitar amp \$75. Tape recorder \$150. Peters, 434-5661.

Six Lhasa Apso puppies from imported stock. Calm, gentle children's pet. Wormed. Paper trained, \$125. Jim Bodmer, 932-4841 League City.

Chihuahua puppies, male, AKC registered, Gwen Seat, 932-6020.

Hollifrafter's SX-111 Ham Band Receiver and EICO 720 CW transmitter. After 5, call 482-7483, Ron Pollack.

New, handcrafted early American pine chest. Measures 32 wide, 16 1/2 deep, and 29 inches tall. Handrubbed antique pine finish. Call 591-3905, after 5 pm. Paul Sturtevant.

92" beige Naugahyde sofa, matching chair, good, \$70. Walnut formica dinette set, 1 leaf, 4 vinyl covered brown and white chairs, excellent, \$30. R. M. Moore, HU 8-2204.

Puppies \$5 each, part collie, part chiba, part undetermined, call 474-2906.

Antique bottles; vacuum tubes, and misc. radio parts; surplus military radio equipment, metal desk; R. Cox, 944-0366.

63 Buick trailerhitch, \$10. Superlift shocks, \$20. B. Klotz, HU 8-1514.

Alaskan wolf-skin parkas, lady's and man's matching, wolverine face and cuff trim, little used, light and warm. \$150 each. B. Klotz, HU 8-1514.

Four adult Astroworld tickets, full admission, regular \$3.50 each-sell \$2.50. Bryan Davis, 862-3533.

16-ft. Falcon fiberglass boat, 40-hp Evinrude, tilt trailer, Selectomatic start/steering, battery, windshield, like new. Bryan Davis, 862-3533.

16 ga. shotgun shell reloader and supplies, including powder, primers, shot, etc. Loads plastic or paper hulls. Sell all or part. John Hyams, 932-5028.

For sale 9 x 12 braided oval rug, \$25, coffee table, \$10. Ussery, HU 8-1825.

1967 Henslee Mobile Home, 2 bdrm, 1 1/2 bath, central air/heat, carpeted. Take up payments. 427-4477.

Fly with Skyrovers, Inc., LaPorte airport. 172-\$6/hr., 182-\$9/hr., J3-\$4.50/hr., \$12.50/mo. dues. 488-3872 or 944-5635.

Rock polisher, simple model for use by young boy just beginning. Paul Weitz, 591-3071.

Kenmore automatic washer and gas dryer, copper-tone, \$125 each. Coldspot frostless refrigerator-freezer with icemaker, copper-tone, \$225. Gold carpeting and padding, 12 x 18, \$100. Antique white oval dining table, 4 high-backed vinyl chairs, \$100. T. Guy 591-2865 after 6.

Islander Bahama 24' sloop. Complete. 6 hp O. B., life-lines, cushions, life preservers, anchor, etc. \$5500 (firm). 877-2651.

Kodak cameras (3) w/flash attachments and batteries, Brownie Holiday, Brownie Hawkeye and Instamatic 104; figured green lounge chair. 944-8241.

Baby bed, matching chiffarobe, mattress, all for \$50. Robert L. Pereboom, MI 5-6043.

68 Honda, 125 Scrambler, 2300 miles, like new. \$390, call MI 5-5154 after 6:00 p.m., or WA 1-1892.

Sears auto washer, 1964, \$75. GE elec. dryer, \$75. 591-3516.

RCA console 21 inch TV mounted on wheels. Good picture except for vertical hold. \$30. N. R. Bailey, MI 9-0197.

Off-white fully-lined patio drape, left-hand rod, \$15. Evelyn Huvar, 483-7626.

Alterations, dressmaking and tailoring. Evelyn Huvar, 483-7626.

Oriental hand-hooked rugs (2) from Japan, 9' x 12' each, like new, grey. \$75 each or both for \$125. Buckel, GR 1-3226.

Ranger 4-8 track automobile stereo tape deck, never been used, Mack Henderson, Dickinson, 534-4461 after 6:30 pm.

Dressmaking, alterations for ladies and children. Reasonable prices. K. Young, 534-5231, Dickinson.

LS-16 sailboat, galvanized tilt trailer, 3 1/2 hp outboard, many extras, all in excellent condition. Ed Simon, 488-4043.

Bedroom suite; 2 pc. \$25, 3 pc. \$35, 2 vinyl chairs; \$10 each, both \$15. J. Sutton, 932-3979.

Motorcycle, 66 250cc Suzuki X-6 Hustler. Two helmets, tools and manuals. Under 5,000 miles. \$395. Spivey, HU 8-0369.

Dressmaking, by appointment. Dottie Whittington, 488-4394.

Round formica dinette, 4 chairs, \$12. Emerson 16" B&W all channel portable TV. Needs repair, \$15. Day bed \$5. TV/record stand, \$3. J. Grayson, 474-3770.

Custom deer rifle with 4 power scope and ammo 90. Walnut target grips for Ruger 22 cal. auto pistol \$7.50. C. Hopkins, 944-2838.

Durst M600 enlarger, 50 mm f/4.5 Iscorit lens and timer. Excellent condition, \$85. Bill Powell, MI 5-1748.

Bedroom nylon plush carpet and pad, both \$45. Excellent condition. J. Cohen HU 8-3171.

35mm Nikon-F camera with 50mm-f.1.4 lens with case. \$275. Call HU 8-0216 after 5.

Crosley refrigerator, 10 cu. ft. freezer across top. \$50. Footstool, \$5. 932-2718.

## CU Doors Will Be Closed Three Days

The MSC Credit Union will be closed for three working days following Thanksgiving for a change over in its accounting system.

Accounts are being converted to TCUL Data Systems, a special accounting system devised and programmed for Credit Unions only. The CU doors will be closed on November 29th, December 2 and 3rd.

**WANTED**

Want to join or start carpool from area north of Red Bluff Rd. and South of LaPorte Freeway, 8-4:30, M. Pettit, 472-1425.

Wanted: World Book Encyclopedia set, recent edition in good condition. Please call HU 8-4005.

Wanted: large late model used refrigerator. Prefer Avocado green color. M. C. Owens, 488-1711.

Utility trailer—small or medium size. Paul Weitz, 591-3071.

Want single girl to share 2 bedroom apt. with same in Nassau Bay. Betty Berkstreser, 591-2637.

Office-size man's desk, preferably with central locking mechanism and modern styling. C. E. Whitsett, 488-1337.

Need approximately ten people to form an investment club for purpose of developing a commercial lot. Richard O. Werlein, Atty. 488-2351.

## "Take-Home" Thanksgiving Dinners Offered at MSC

The MSC Exchange Council is offering a "take-home" Thanksgiving Day dinner to employees.

The MSC Cafeteria will cook up a 12 or a 14 lb. turkey, with trimmings for a total cost of \$12.75. This price includes two quarts of cornbread dressing, one pint of giblet gravy, one pumpkin pie and a one lb. can of cranberry sauce.

To place your order call Mr. Lynch or Mr. Corley at the MSC Cafeteria, ext. 5905. Orders must be placed no later than 3 P.M. November 25.

## \$9.8 Million Contract Awarded to Link

NASA has awarded a \$9.8 million contract to the Link Group, General Precision Systems, Inc., Binghamton, New York, for maintenance and modification of the Manned Spacecraft Center's simulator complex in Houston. The contract covers the period September 1, 1968 through August 13, 1969.

Under terms of the contract, Link will provide maintenance and necessary modifications for MSC Apollo command module mission simulators, lunar module mission simulators and other Apollo simulator and training equipment located both at MSC and at Kennedy Space Center, Florida. The contract provides for two options of one year and six months respectively, allowing for extension of the contract through February 28, 1971.

The Apollo command module simulators provide flight training for astronaut crews assigned to a specific mission. Nearly every detail of the flight, with the exception of weightlessness, can be simulated. This gives flight crews extensive on-the-ground training before the actual flight and gives them training in instant reaction to emergencies which may occur during the flight.

## What happens if you don't cash in your Savings Bonds when they come due?

You pay \$37.50 for a Series E Savings Bond and in 7 years it grows to \$50.

But what if you don't cash it in?

Fact is, it keeps right on growing.

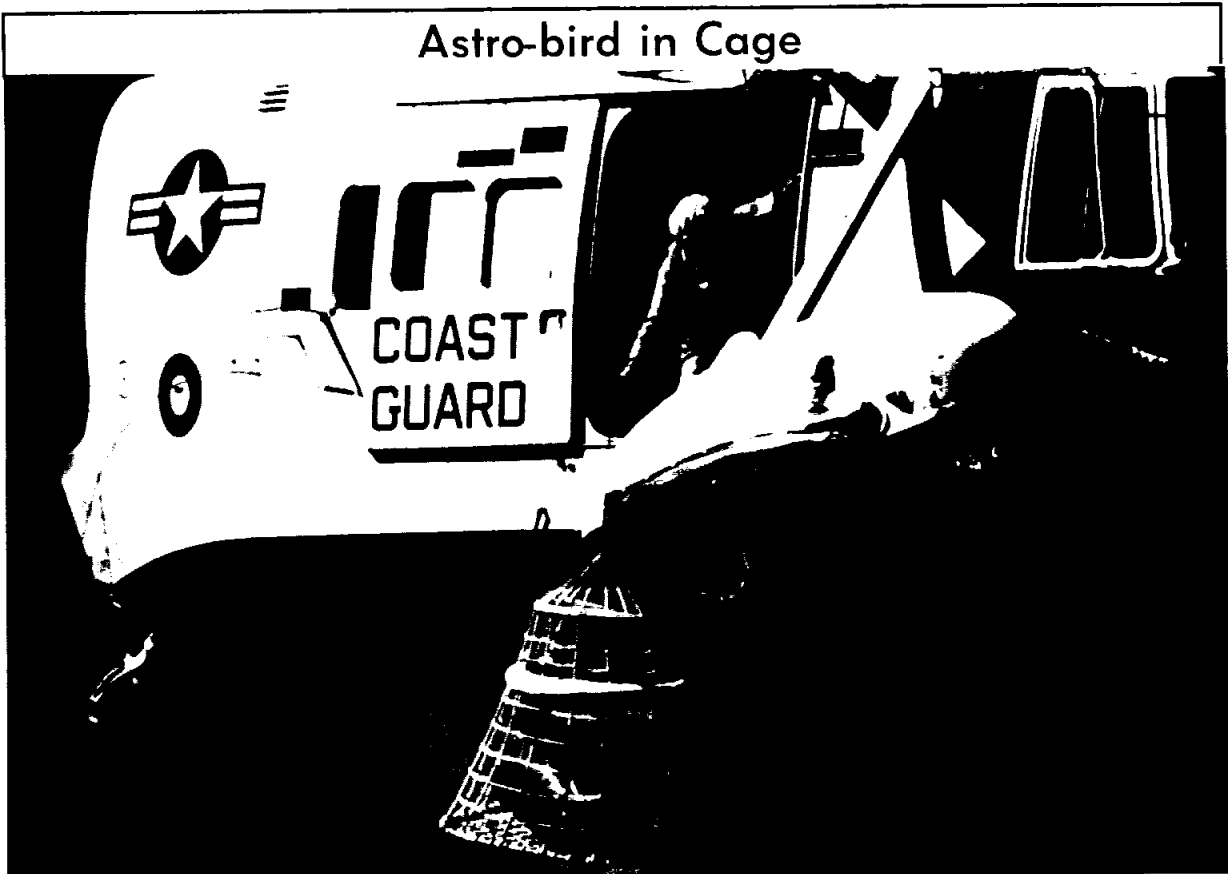
At the current interest rate, when it's 10 years old it will be worth \$56.56. At 15 years its value will be \$69.46. And at 17 years, \$75.40.

There's no trick at all to letting your E Bonds work overtime for you this way. You don't even have to remember to renew them. The Treasury Department does it automatically.

And while your growing Bonds are making you richer, they're helping keep America strong in a world where strength to stand up to the enemies of freedom is imperative.

Buy Bonds where you work or bank and see if you don't feel pretty good about it.

## U.S. SAVINGS BONDS NEW FREEDOM SHARES



EASY DOES IT—Apollo VIII lunar module pilot William A. Anders is hoisted aboard U. S. Coast Guard helicopter during recent water egress training exercises in the Gulf of Mexico. Anders is sitting inside new rescue device employed for the first time on a manned spaceflight recovery operations during Apollo VII.

## MSC Aggies Invited To View A&M Game Films

MSC "Aggies" are invited to attend showings of Texas A&M football games at the Southeast Harris County A&M Club.

The films are to be shown each Monday at the Elks Hall in Pasadena. For further information contact Doug Campbell, ext. 6208.

## Spare That Tree?

EAA's Steve Grega is searching the woods for three or four 6-foot artificial Christmas trees to borrow for the December 14 MSC Childrens Christmas Party. Anyone willing to loan a tree for about four hours that day should call Grega at 5348.

## SERIES ABOUT FUTURE— Hodge Sees Much Work Ahead for MSC

There is a man at MSC who spends his days trying to work himself out of a job.

Advanced Missions Program Office manager John D. Hodge doesn't plan to retire anytime soon, but he described his assignment as "continuously doing myself out of a job so that a new program office can take it over."

The silver-haired ex-Briton looks at manned spaceflight from the standpoint of what it will be 10 or 15 years from now, with long-duration space stations and reusable logistics vehicles.



HODGE

"One of the things that was most noticeable to me when I first began to look at future programs some four or five months ago was a pervading sense of pessimism," said Hodge. "One heard of a lack of public interest, a declining budget, and a general uncertainty about where we are going. The facts, in proper context, do not warrant such pessimism."

"I think the outlook for MSC in design work is very fruitful," continued Hodge. "I think we are looking toward a new generation spacecraft to be designed for flying in the time period of the mid-70s. And when you think in terms of five years of development, that means that very shortly we'll be getting into that business."

In what Hodge describes as a "new start for the mid-70s," studies are underway for a sort of junior space station for the purpose of learning more about long-duration missions and for resupply and relief manning with reusable logistics vehicles. "Decisions made now will help us make those programmatic decisions of the future," said Hodge. "For example, a large space station that survives for two or three years in earth orbit is a part of solving the problems of going to Mars, since manned Mars missions will last about that long."

Hodge's group is looking beyond Apollo's first lunar landing and beyond the earth-orbital Saturn S-IVB stage workshop of the Applications Program. Under scrutiny is a step-by-step increase in stay-time on the lunar surface.

An advanced logistics vehicle under study by Hodge's think-tank people, would have on-board checkout equipment to eliminate elaborate launch complexes and would have the capability to make land landings.

"We are going toward land landings," Hodge explained, "mainly because we are talking about reuseability, and that seems to be the right way to go."

Requests for proposals went out to the aerospace industry in early November for the conceptual design study for the advanced logistics vehicle, and Hodge expects that a study contract for a big space station will be let early next year. MSC in mid-October awarded a study contract to McDonnell Douglas Corporation for investigating the feasibility of modifying the Gemini spacecraft into a nine-man earth-orbital logistics vehicle to support space stations—the so-called "Big-G" concept.

Additional study contracts for extended lunar exploration in the mid-70s are expected to be let sometime next year.

In commenting on the recent transfer of the Apollo Applications S-IVB workshop airlock development to Marshall Space Flight Center, Hodge said that it was a combination of the need for design integration at one location of a complicated system, and of the fact that MSC is so totally committed to the Apollo Program that the Center could not handle the airlock development from a manpower standpoint.

"I can't overemphasize the fact," said Hodge, "that we are serious about the future and that we intend to continue to build spacecraft and new spacecraft. When the next manned program is approved—and you notice I say 'when'—it will contain significant contributions from us at MSC."

### LTA-8 Manned Tests Successfully Completed

The Apollo Lunar Module successfully completed a manned vacuum chamber test November 14, to help clear the way for manned lunar missions with the vehicle.

Astronaut James B. Irwin and Gerald P. Gibbons, a Grumman Aircraft Corporation consulting pilot, were crewmen for the final manned portion of the test, which simulated liftoff from the moon's surface and rendezvous with an orbiting command module.

Five mannings, each about 13 hours long, were conducted in the test series, with Irwin and Gibbons serving as crewmen for two of the mannings and Gibbons and fellow Grumman pilot Glennon M. Kingsley the crew for the other three mannings.

### Awards Presented To USAF Personnel

Sixteen members of the Air Force assigned to MSC received decorations yesterday in ceremonies in Building I.

Astronauts Thomas P. Stafford and Michael Collins received Command Astronaut Wings. The awards were presented by Maj. Gen. Nils Ohman, Commander, Headquarters Command, USAF, Bolling AFB, Washington, D.C.

Other decorations presented during the brief ceremony included the Silver Star, Bronze Star, Distinguished Flying Cross, Air Medal, RVN Armed Forces Honor Medal and Air Force Commendation Medal.

### AAS Hears Hodge Speak on Future Programs

John D. Hodge, Manager of the Advanced Missions Program Office of MSC, was the guest speaker November 19 at the monthly meeting of the American Astronautical Society (Houston Section).

Hodge spoke on "Tomorrow's Programs for Man In Space." More than 100 AAS members and guests attended the dinner meeting at the Holiday Inn.

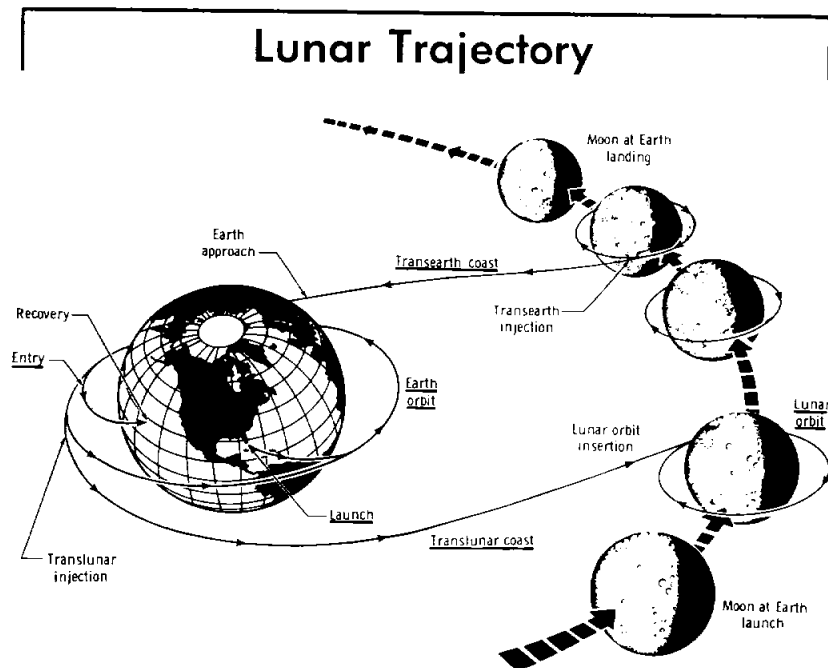
### Experiments

(Continued from page 1)

The scientific experiments are a passive seismometer, a laser ranging retro-reflector and a solar wind composition experiment.

The passive seismometer is a self-contained 100-pound seismic station with its own earth-moon communication link. It is powered by solar cells and may be provided with radioisotope heaters to enable it to survive the extremely cold lunar nights for up to a year. It will provide data on the internal activity of the moon. If the moon is seismically active, information in its structure can be obtained. These data will assist in determining the validity of current concepts about the moon and its origin and perhaps lead to new concepts. Dr. Gary Latham of Columbia University's Lamont Geological Observatory, Palisades, N. Y., is experimenter.

The laser ranging retro-reflector is a wholly passive experiment consisting of an array of precision optical reflectors which serve as a target for earth-based laser systems. It weighs 70 pounds. Data obtained will improve the measurement of earth-moon distance and the fluctuation of the earth's rotation rate. The theory of intercontinental drift can be tested by direct measurements from different continents. Dr. Carroll O. Alley of the University of Maryland, College Park, and Dr. Donald Eckhardt of the Air Force Cambridge Research Laboratory, Cambridge, Mass., have experiments of this type under development.



### Apollo VIII Around the Moon

(Continued from page 1)

- Providing valuable experience in validating the Apollo CSM communications and navigation system at lunar distance.

- Completing the final verification of grounds support elements and onboard computer programs.

- Increasing the understanding of environmental conditions in deep space and the proximity of the Moon.

- Confirming the ability of the crew to see, use and photograph landmarks during a lunar mission.

- Providing new measurements of variations in lunar gravitational potential discovered in NASA's lunar orbiter program.

The decision to undertake a flight around the Moon was reached after a long series of reviews which included:

- Final certification of solutions to the anomalies revealed during the unmanned Apollo 6 flight last Spring.

- Detailed analysis and review of the results of the Apollo VII mission.

- Complete ground tests of Saturn V components, including insulation, structural and pressure tests, before the Apollo



The solar wind composition experiment is designed to entrap the noble gases (Helium, Neon, Argon, Krypton, Xenon) in the solar wind. It consists of a sheet of aluminum foil which is placed across the solar wind. It is retrieved before the astronauts leave the moon and return to earth for analysis. The one-pound experiment is developed and funded by the Swiss Government. Dr. Johannes Geiss of the University of Berne is experimenter.

In the second lunar landing mission, NASA plans to have the astronauts deploy a full geophysical station or Apollo Lunar Surface Experiments Package (ALSEP) and conduct a detailed field geology investigation.

VIII command and service modules were certified ready for lunar flight.

- Complete design certification reviews of all launch vehicle and spacecraft subsystems.

The final review November 11 by Paine, with all top NASA officials participating, included an assessment of the total risks involved, readiness of all flight and support systems and the degree to which the recommended lunar orbit flight would advance the Apollo Program toward the nation's long-standing objective of a manned lunar landing and return by the end of next year.

"After a careful and thorough examination of all systems and the risks and benefits involved in each of the mission alternatives," Dr. Paine stated, "we have concluded that we are ready to fly this advanced mission around the Moon. Frank Borman and his crew are eager to proceed, our engineers unanimously recommend this mission, and, without being overconfident, we believe that we understand the hazards involved and are now ready to take this next step forward in the nation's space program."

In related Apollo program activities on Cape Kennedy:

Apollo IX — A series of manned altitude runs was completed on November 18. Astronauts Charles Conrad, Jr., Richard F. Gordon and Alan L. Bean (backup crew) were in the spacecraft (CSM-104) for approximately seven hours. Following the altitude runs the vehicle was prepared for movement to the Vehicle Assembly Building.

Preparations were also underway for the mating of the lunar module (LM-3) with its spacecraft LM adapter (SLA) late this week.

Apollo X — Command and Service Module 106 was scheduled to be shipped from North American Rockwell, Downey, California to KSC late this week. Apollo X crew members Thomas P. Stafford and Eugene A. Cernan took part in sea level run in Lunar Module-4 earlier this week and unmanned altitude runs for LM-4 are slated for next week.