GEOLOGICAL FIND? — Gene Cernan is pointing his camera at something verrry interesting. He discovered it during an Apollo 17 field trip to Sudbury, Canada. To see what the lens is seeing, look at page 4.

Meteoroid Hit Tells Lunar Secrets

Scientists studying seismic signals produced when a large meteoroid struck the moon May 13, have confirmed the moon has a crust 38 miles thick

They also report evidence of a lunar mantle and possibly a core.

Dr. Gary Latham of Columbia University's Lamont Doherty Geological Observatory said although evidence for a lunar core is still very tentative, seismic signals appear to show a change in velocity indicating a change of state in lunar material at a depth of about 600 miles.

Dr. Latham, principal investigator for the network of four seismic stations placed on the moon by Apollo astronauts, said the lunar crust, measured in the Fra Mauro region where Apollo 14 landed, is about twice as thick as the crust beneath the continents of Earth.

He said the lunar highlands appear to be solid rock below the thick regolith or soil-like layer which covers them.

This, he said is consistant with evidence from analysis of lunar samples, which suggests the highlands are remnants of a primitive crust formed by extensive melting of the lunar surface shortly after the moon was formed.

Below the crust, beginning at a depth of about 38 miles. Dr. Latham said, a change in reflected seismic waves shows the moon has a mantle similiar to Earth's.

The May 13 meteoroid impact was the largest recorded in the three years Apollo science stations have been operating on the moon.

Dr. Latham said the meteoroid struck the moon 88 miles due north of the Apollo 14 landing site at Fra Mauro, releasing energy equal to an explosion of about 200 tons of TNT.

He said the meteoroid was about 6 feet in diameter and gouged out a crater about 300 feet in diameter.

Dr. Latham said the University of Texas McDonald Observatory at Fort Davis will attempt to observe the crater and pinpoint its location as soon as conditions permit.

ROUNDUP

NASA MANNED SPACECRAFT CENTER HOUSTON, TEXAS

Vol. 11 No. 15 June 9, 1972

John Zarcaro Named Deputy Director Of Earth Resources Program Office

John G. Zarcaro, formerly chief of the Science Mission Support Division, has been named deputy manager of the new Earth Resources Program Office.

As deputy manager, Zarcaro will issue technical direction and establish program office policy on behalf of Program Manager Cliff Charlesworth.

NASA's Earth Resources Technology Satellite (ERTS), scheduled for launch this summer, and its Skylab missions, beginning in 1973, will gather large amounts of new information on Earth's environment and its resources.

The Earth Resources Program Office will have a major role in both these missions, coordinating efforts at MSC to provide "ground truth" information used in validating data collected from space and helping obtain the maximum possible practical return from the information gathered.

It will be responsible for coordinating the design and development of experiments and equipment which will be flown in aircraft and spacecraft to survey earth resources from vantage points ranging from a few thousand feet to hundreds of miles above Earth's surface.

McDivitt Leaves Air Force, NASA

Brig. Gen. James A. McDivitt Wednesday announced his retirement from the Air Force and NASA, effective September 1.

On that date, the former astronaut will become senior vice president of the Consumer Power Company, which has headquarters in his hometown of Jackson, Michigan.

He will be on terminal leave from July 1 until his retirement date.

Gen. McDivitt, who command-

(Continued on Page 2)

LESSONS FOR LAST APOLLO — Geological formations around Sudbury, Ontario, Canada, are similar to those expected at Taurus-Littrow, landing site of Apollo 17—the last Apollo. Those formations are what drew the 17 lunar surface crew, spacecraft commander Gene Cernan (center-front) and lunar module pilot Jack Schmitt (just behind Cernan) to Sudbury. Also in the party were Apollo 17 Flight Director Pete Frank, left, and William Muehlberger, right, principal investigator for lunar surface geology for the December mission. Muehlberger is with the U. S. Geological Survey.

Joint Flight 'Most Meaningful Cooperation': Dr. Fletcher

This is the text of Dr. Fletcher's May 24 statement on the joint Soviet-U.S. space mission, perhaps one of the most significant events in the young life of space exploration.

* * *

We of the National Aeronautics and Space Administration are extremely pleased that President Nixon's meeting with officials of the Soviet Union in Moscow has brought to fruition the most meaningful cooperation in space yet achieved by our two nations.

We have been discussing the possibilities of such cooperation for some time now, and some important technical agreements had been reached earlier.

Now, as President Nixon has announced, we have jointly agreed to firm these commitments into a definitized program and have begun to set up the timetable for various cooperative events to take place.

The most dramatic of these events will involve the rendezvous and docking of a U. S. spacecraft with a Russian Soyuz spacecraft in 1975.

It will be an earth orbital mission. A U. S. command-and-service module will link up with a Soviet Soyuz spacecraft.

While the spacecraft are docked together the astronauts and cosmonauts will visit both spacecraft and perform a number of simple scientific tasks.

Let me describe briefly a few of the details of the joint mission.

Our Apollo spacecraft will be fitted with a new system referred to as the docking module. It will be launched from Cape Kennedy on a Saturn IB into low earth orbit—about 110 nautical miles.

After it separates from the second Saturn stage, the command and service module will turn around, dock and extract the docking module in much the same way the lunar module is extracted from the second Saturn stage on a moon mission.

The plane of the orbit will be inclined 51.6° to the equator, in order to pass over the USSR launch site.

Soon after the Apollo launch, the Soyuz spacecraft would be launched into an orbit of about 145 nautical miles.

Once this has been attained, the Apollo would begin an active rendezvous sequence designed to bring the two crafts close together. The Apollo radio and optical guidance systems would be used to rendezvous.

At the time of station keeping, the Apollo spacecraft would be maneuvered to dock with the Soyuz, using a new TV docking alignment system and the compatible docking system.

Once locked together, it is expected that American astronauts would visit the Soyuz first; they would enter through the docking module, carrying voice communications equipment and an additional television camera.

After this, an American astronaut would accompany a Soviet cosmonaut back to the Apollo.

In preparation for this event and other cooperative endeavors to follow, NASA will begin the manufacture of the docking module this summer.

A task group of engineers from our two countries has already met several times to discuss the technical problems involved; another meeting will be held in the very near future.

(Continued on Page 2)

Hendricks Wins Golf Association June 3 Match

The fourth medal play tournament of MSC Golf Association new season was played at Sun Meadow on June 3.

Flight winners were:
Championship - first Mike Hendricks 79 (66), second John Jones 80 (68), and third place Bill Dusenbury 80 (69), Pete Smetek 81 (69) and Ike Spiker 78 (69).

First - first Reagen Redman 84 (67), second Bill Johnson 86 (68) and third Ed Cawley 86 (69, M. Jones 88 (69), Norris Taylor 88 (69), and Gerald Kinney 85 (69).

Second - firsts Olin Graham 86 (64), second Morgan Cooner 90 (66), and Bill Ramey 88 (66) and third John Bowen 95 (70).

New - first Jay Wiltz 90 (63), second - John Lottinville 90 (65), third - Bill Keathley 88 (67), and fourth Dan Kennedy 88 (68).

The next medal play tournament will be held at Herman Park July 15.

McDivitt—

(Continued From Page 1)

ed the Gemini 4 and Apollo 9 space missions, has been special assistant to the center director for Organizational Affairs since May 1.

He served as manager, Apollo Spacecraft Program from September, 1969 through April, 1972, which encompassed Apollo missions 12 through 16.

He left the Astronaut Office in June, 1969 to become manager for Lunar Landing Operations in the Apollo Spacecraft Program Office.

Gen. McDivitt has resigned from the firm's board of directors to which he was elected in January, 1971.

McDivitt joined the Air Force in 1951 and flew 145 combat missions during the Korean War.

He was selected as a NASA astronaut in September, 1962, after experience as an Air Force expertimental test pilot.

Gen. McDivitt's election to the executive position with Consumer Power Company was announced today by A. H. Aymond, chairman of the board and president. Company officials responsible for finance, law, controller and public relations will report to McDivitt, Aymond said.

Consumer Power Company is one of the 10 largest operating electric and gas utilities in the United States and operates throughout Michigan's lower peninsula outside Detroit.

More Placement Help for RIFed

Job-hunt help for personnel af, fected by the current reduction in force is being offered by Telesis Associates of Seabrook.

The group offers job experience evaluation and assistance in preparing and placing resumes.

For details contact: Sandy Gaskin at 474-3955 after 4 p.m. or at Telesis Associates' offices 1101 Meyer from 9 to 1 Saturdays ar after 4 weekdays.

AFGE Local Sets 'Fair Practices' Panel in Motion

A Fair Practices Committee is operating as a result of the May 11 meeting of American Federation of Government Employees Local 2284.

The committee, to help "assure MSC compliance with the Equal Employment Opportunity Program outlined by President Nixon" was announced by Local 2284 President Leslie Ghetzler in a letter to MSC Personnel Officer Jack Lister.

Committee chairman is Aneta Davis of Administration and Program Support's Program Resources Division.

Other committee members are Margie McGregor of E&D Guidance and Control, and Helon Crawford of Center Operations' Management Services Division.

Week on Waikiki Offered to EAA Travel Clubbers

If a week in Hawaii, including air fare and a room on Waikiki Beach, for $260 sounds good, get in touch with the EAA Travel Club.

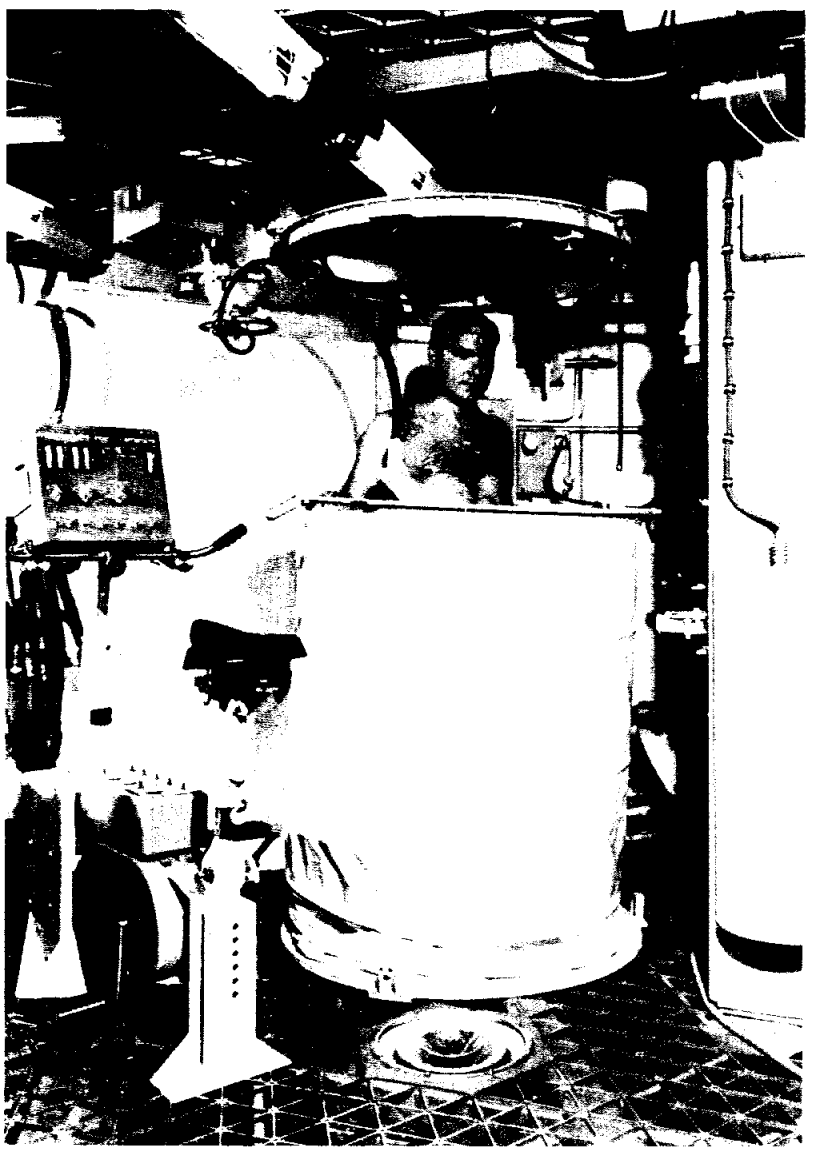
Departing Houston on Sunday October 8 and returning on Sunday the 15th, the package further includes a circle tour of the city, a visit to the "Punchbowl" and a ten per cent discount for other tours and services.

MSC and contractor employees are eligible. Contact: Travel Club, Box 57324, Webster or phone Ron Rafuse at 332-1356 or Gerry Swanick at 481-2396.

Shuttle Contracts Awarded TRW

Two study contracts relating to development and safety concepts for containerized payloads that might be used on the Space Shuttle have been awarded to TRW Systems Group, Redondo Beach, California.

MSC has awarded $134,160 in technology funds for the performance of the studies; of this amount, $67,138 has been allocated for a contract called "Space Shuttle Sortie Payload Safety Criteria Study" and the balance is for a contract called "Space Shuttle Sortie Payload Systems Compatibility Criteria Study."



SPACE-AGE CLEANUP—It looks pretty much like the old GI field shower, but this actually is the latest in spacecraft showers. Skylab crews are expected to be able to enjoy some more of the comforts of home when they use the first space-age shower. The curtain is pulled up from the floor and attached to the ceiling. The water comes through a push-button shower head attached to a flexible hose, and used water is drawn off by a vacuum system.

Joint Flight—

(Continued From Page 1)

It will take two years to build and test the docking module.

We are pleased that as part of the cooperative effort there will be Soviet engineers working side-by-side with our own NASA people, probably in both countries.

The joint manned flight program will also bring many immediate and direct economic benefits to the people of the United States.

First, the project will bring employment to thousands of aerospace workers to build, test or modify hardware necessary for the flight.

This employment will reach a peak of about 4400 by the end of 1974.

In addition, thousands of other workers employed to support test, checkout and launch activities are now assured of jobs through the launch and flight of the joint mission.

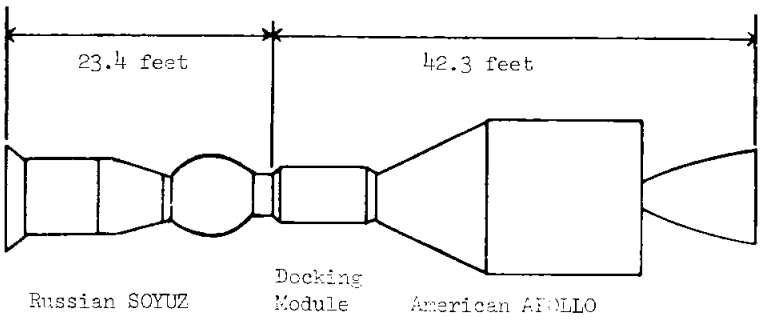
Beyond this, the agreement to carry out a joint mission assures the retention of the Apollo team, a unique technical and management resource, for work on the Space Shuttle and other important future programs.

It is our hope that this first mission is the precursor of future joint manned and unmanned efforts which will enable both nations to avoid duplication and reduce the costs of space exploration.

All of us are quite optimistic that this new deeper cooperation in the exploration of space may lead to increased cooperation on still other programs.

It will probably be the most visible Soviet-U.S. cooperative effort in history, since it may involve cosmonauts and astronauts working together on a very complex mission while the whole world is observing on television via satellite relay.

Such cooperative programs will enable both countries to better serve all mankind with continued vigorous efforts to expand our understanding of science and development of new technology for better life on earth.



Four from MSC Support June 25 "Speed Classic"

At least four MSC personnel will be actively involved in the Houston Gulf Coast Marathon Association's "Houston Power Boat Speed Classic" on Sunday, June 25.

The first of two one-hour races will involve three classes of single engine outboards running 65 to 90 miles an hour and will start at 1 o'clock at the Bayshore Boat Club on Old River—just off interstate 10 at Mommouth Drive.

The second race will be with multi-engine outboards and powerful inboards capable of hitting over 100 mph.

The four MSC participants, all from Tech Services, will handle rescue and pickup work. They are Jim Bailey, Walt Wilson, Art Lizza and Jerry Purcell.

For more information or for tickets, $1.50 in advance or $2 at the gate, contact Bailey at MSC extension 7505 or Pete Alines at STC.

16 Subsatellite Impacts Moon

The particles and fields subsatellite put into lunar orbit by Apollo 16 apparently has crashed into the moon after 425 revolutions.

Radio contact with the 90-lb. scientific package was not re-established when it should have been—as the subsatellite was to have come out from behind the moon—on the 426th revolution.

The package is though to have hit the moon about 5 p.m. CDT on May 29.

ROUNDUP
NASA MANNED SPACECRAFT CENTER HOUSTON, TEXAS

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

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.

Royal manual typewriter $35. 118 FDCs (1929-1968), 39 commemorative covers (1933-1971), various stamps $125. Bennett 488-3579.

Taperflex slalom water ski 9 mo old, list $80, sell $45. Ives 333-2607.

Ham gear: Heath HW-100 like new $225. Heath HW-32A used 20 hrs $90. Lindsey 488-0517.

Toilet, monomatic, 12V, chemical recirculating self-contained, for boats, campers or trailer, xlrt cndn, $100. Booth 482-7919.

Wilson golf clubs, 2-9 irons, 1-2-3 woods, gd cndn, $60. Harnage 481-2335.

Sansui AM-FM stereo tuner, xlnt cndn $75, Lafayette 20W stereo amp $25, Garrard turntable, new cartridge $35. Cantin 334-2302.

Resumes prepared in professional manner open odors to best jobs, from $25. Gaskin 488-5428.

BOATS

21' Southcoast sailboat wi working sails and 5hp obm $1800. Hill 332-3838.

Like-new 16.5' Chrysler Sport Fury trl-hull fiberglass, 120hp obm Chrysler, big wheel trailer (buddy bearings), two 6 gal tanks, canvas top ski acces & 5 life jkts, sacrifice for quick sale. Reina 488-1326.

Lido 14 sailboats, info on prices & cndn used Lidos for sale by owners. Hoover 334-2392.

18' Hollywood fiberglass, 80hp Johnson, galv trailer, new top & windshield. 482-1817.

PROPERTY & RENTALS

Friendswood 3-2-2, den, formal liv, covered patio, wall-wall cpt, gas grill, $3900 equity, $217 mo. Coupland 482-1026.

Shoreacres 5-2-2, fireplace, oak trees, fenced, 4 blks to boat ramp/fishing pier, 1 blk elem school, assume 6¼% or refinance. Tom 471-0928.

CLC 3-2-2 across from school-playgrn-pool, fenced, liv/din, pnl den, landscaped, low equity Christopher 488-2774.

Rent 170hp Apache twin 175mph cruise $35/hr wet. Hanisch 554-6484.

CLC 3-2-2 brick nr school-rec center-parks, fenced, landscaped, cpts, many xtras, by owner. 488-1403.

CLC 3-2-2 brick colonial, air, cpt, firpl, nice yard, equity sale, low mo paymnt. Massey 488-6134.

Elegant beach house of Gulf, sleeps to 8, cook facil, sun deck, fishing & beach, Bolivar, 2 days 3 nites $100. 334-2360.

Rent: Jamaica Beach on canal, 2 bdrm sleep 6, nice furn, cntrl air, taking reservations. Maddox 481-1443.

WANTED

Ride to work, Friendswood to Bldg 6 (off-site) 8 to 4 45, pay $5/wk. Coupland 482-1026.

Artist, commercial wi portfolio quality samples, full or parttime employ wi local agency. Mrs. Barbeaux 333-3101.

Art supplies: easels, drawing boards, color sets, pens, brushes etc. Barbeaux 333-3101.

Executive desk & chair, metal files, other ofc equip. Gaskin 488-5428.

Notice: Plan ahead! Mark calendar now for annual MSC picnic at Camp Manison in Friendswood Saturday Sept 23.

Rental Lark or similar tent camper wi stove and sink, sleeping 6 for 3 wks in July. Konradi 334-2180.

Alto saxophone. Foster 487-0155.

VEHICLES

68 Pontiac Executive 4dr sed, vinyl top, full equip, clean, xlnt cndn $1300. Welch 641-1427.

67 Mercury Montclair 4dr, xlnt cndn, auto, air, AM/tape, pwr steer & seats. Vogt 488-4069.

For rent: 170hp Apache Twin 175mph cruise $35/hr wet. Hanisch 554-6484.

71 Suzuki 125 trail bike, less than 500 actual mi, xlnt cndn, mirrors, lug rack, $375. Jackson 488-4450.

71 Mazda RX2 rotary engine, AM/FM, 4dr, assume balance under $2700. Singleton 488-6126.

Custom go-kart 3½hp, knobby tires, runs & looks gd, $65. Boys 20" buzz bike xlnt cndn $20. Pavelka 482-7461.

68 Honda 90 trail bike, 6000 mi, licensed, good tires & battery $150, car carrier & metric tools xtra. Mayhew 333-3291.

68 Chev ½ton pickup, SWB, stepside, V8, r/h, std trans, custom tool box, gd tires, clean $1500. Womack 488-6758.

65 Honda 300 gd cndn, new battery, runs gd, helmet, $385, consider trade. 733-7667.

71 Honda CL100 $350. Eubanks 534-3651.

HOUSEHOLD ARTICLES

Unique hand-made king-size bedspread, gold suede cloth, red trim, like new $40. Stull 334-3370.

Stereo Magnavox xlnt cndn, 3 spd, beaut light wood floor cabinet, $100. 488-4005.

Sears black and white check twin size bed spread, like new, $4. Stull 334-3370.

Refrigerator xlnt cndn, deluxe Sears Coldspot 16.1 cu ft frostless, sep 180 lb freezer below, coppertone, $225. 488-4005.

GE clothes washer & elec dryer, both gd cndn, $125 total. Shelton 332-2091 or 488-6883.

Carpet 9x12 orange shag wi pad, used 2 yrs, xlnt cndn $35. Taylor 488-3311.

Matching washer & dryer, xlnt cndn, deluxe Sears Lady Kenmore, coppertone, both for $225. 488-4005.

3 pc living or den suite, black vinyl & walnut sofa, rocker & occasional chair, like new $100. 649-0698.

B&W 17" Sears portable TV, VHF & UHF, beige, works fine. $20. Zrubek 333-2549.

Matching twin bed headboards white upholstered, both for $12. sunlamp $1. 488-4005.

B-flat clarinet $150, snare drum $10. Bennett 488-3579.

Flute, Bundy, in xlnt cndn $85. Zedekar 944-1257.

Cleveland tenor sax $200, very gd cndn, used 2 yrs, xlnt for hi school band. Miller 471-2789.

Kimball Artist console piano absolutely like new $675. McMurrey 534-3625.

LOST & FOUND

Found: lighter with initials L.D.L. on bottom, at NASA baseball fields. Heflin 483-2131.

PETS

AKC std poodle puppies, champ-sired. Wadle 946-2806.

Free to good home Blue Russian/Persian cat, 2 half-Persian kittens. 488-1390.

LATE ENTRIES

Wanted: VW engine 1500 or 1600. Jones 488-3976.

Campmobile 67 VW gd cndn, new tires, carpet, overhaul, $1250. Harvey 925-2138.

Sewing machine Kenmore Model 90 zigag wi 4-drawer fruitwood cabinet. Keyser 946-4059.

21" Zenith b&w TV $25, Kenmore auto wash machine $20. Riggan 471-3025.

4-spd photo & stereo AM-FM radio in attractive cocktail table, compact, beaut tone. 488-4043.

Telescope Criterion 4½" wi equatorial mount, 3 eyepieces. 488-4043.

Beige corduroy bed-couch $250, two floral easy chairs $125. Cozens 664-6438 after 6.

Fur coat shearred raccoon looks lk shrd beaver, xlnt cndn, make offer. 488-4043.

14' runabout glassed cedar strip hull, mahogany deck, 30hp Johnson, trailer, very gd cndn. Hargrave 488-3385.

Sailboat Lone Star 16' (Chrylser), galv trailer, many xtras, gd cndn, reasonable. 488-4043.

21' sailboat & trailer, Van de Stadt, fiberglass, large sail inventory, xlnt cndn, reduced to $1700. Irwin 333-3097.

For sale Nassau Bay 3-2-2½ brick wi five 60-ft oaks, fireplace, carpet, beaut landscape. $45,500. Nado 333-2258.

For rent: 2-1-1 liv & din, fenced backyd, off Allen-Genoa nr LaPorte Fwy, $125 mo. Kaiser 645-3964 after 6.

Sonar D-10 (0-60 ft) depth finder, in carton, $100. White, 554-4472 League City.

15-hp Michigan Marine Senior Twin inboard engine, Paragon gear, $100. White, 554-4472 League City.

THE EAGLE HAS LANDED!—It isn't Apollo 11's Eagle and it really won't land until next week, but MSC sailing enthusiasts can get a good close look at the Coast Guard's training barque 'Eagle' when it ties up in Galveston June 15-19. The 295-foot sailing vessel will be open to visitors Saturday from 1 to 5 and Sunday from 10 to 5.

Major Skylab Workshop Test Ends As Crews, Engineers OK Systems

Operational aspects of pre-flight verification-type test of the Skylab workshop have been completed at the McDonnell Douglas Corporation plant at Huntington Beach, California.

Participating in the test were two teams of astronauts who performed checkout activities in two six-hour shifts daily.

Their work inside the workshop was monitored by closed circuit television.

The 48-foot long workshop, 22 feet in diameter, is scheduled to be launched early next year as part of the NASA Skylab space station.

McDonnell Douglas built the workshop under the direction of the Marshall Space Flight Center.

During the three-day test, Skylab astronauts and engineers activated a major portion of the workshop to demonstrate that it will support activities planned for the initial 28-day mission and two later 56-day missions.

Total mission time, manned and unmanned, will be eight months.

Astronauts taking part in the test worked with the workshop hardware in much the same way as they are expected to do in space.

They demonstrated that they can operate experiment hardware, and use the life support systems, including food preparation, refrigeration and water.

The test team checked to see that installed and part of the stowed equipment was accessible and that mechanical and electrical equipment functioned as intended.

The crewmen also worked with tools to be used during the Earth orbital missions to mount, stow and maintain equipment.

Summer Night At Burke Baker

"Stars of a Summer Night" is Burke Baker Planetarium's show for the summer months.

The production features Jupiter, Saturn, and Venus, and uses the planetarium's 50-foot, 5,000-star dome to describe ways to find various stars, planets, and constellations.

The planetarium is located in the Houston Museum of Natural Science, 5800 Caroline Street in Hermann Park.

Programs are scheduled Tuesday through Friday at 2 and 4 p.m.; Saturday and Sunday at 2, 3, and 4 p.m.; and Friday and Saturday evenings at 8.

For reservations, call 526-4273.

Tickets are $1.25 for adults and 50¢ for children under 12 years of age. Children under five are not admitted.

"Stars of a Summer Night" will run through September 4.

Don't forget MSC Picnic

CHAMPIONS — Here's a familiar sight — the Clear Lake Hospital Blazers with another trophy. The MCS employees softball team took first place in the 14th annual Houston Industrial Tournament. The hospital-sponsored Blazers include, in the back row, Mel Richmond, Mike Collins, Ron Epps and John Kaderka and, front, James Larey, Nicolas Lance, Jack Boykin, Jim Pawlowski and Rick Kruse, as well as Dale Frost, Joe Bell, Dennis Waggett and Phil Shannahan, who weren't available for the photo.

NASA Facts: Mission Control Center

Staff Support Rooms Help Make Mission Control Tick

Last issue we looked at the flight controller lineup in the Mission Operations Control Room. Today's portion of NASA Facts: Mission Control Center deals with "The Supporting Cast."

Mission Control Center contains two identical MOCRs, one on the second floor and one on the third.

Either can be used for mission control, or they can be used simultaneously to control separate flights.

At times, one team of flight controllers has conducted an actual flight while a second team is going through a make-believe mission to prepare for a future operation.

But the MOCR occupies only a relatively small portion of the Mission Control Center.

Each operating group is assigned a nearby staff support room where data on the mission are monitored and analyzed in detail.

Other support areas within the facility include the Spacecraft meterological Room, the Spacecraft Planning and Analysis (SPAN) Room, the Recovery Operations Control Room, and the Lunar Surface Experiment package Support Room.

On the first floor of the Mission Control Center are the communications, command, and telemetry system for processing data from the Manned Space Flight Network stations, and the real-time computer complex, which converts the flight data into the visual displays used by the flight controllers in the MOCR.

Mission Control Center is supported by an emergency power building which houses generators and air conditioning equipment for use if regular power fails.

In the event of some unforeseeable but catastrophic failure that prevents the Houston control center from continuing its support of the flight, an emergency facility at the Goddard Space Flight Center in Greenbelt, Maryland, is activated.

The emergency center is a stripped-down model of the one in Houston, incorporating just enough equipment to let the controllers supoprt the flight to its conclusion.

One of the most interesting of the MOCR support facilities is the display/control system, which uses the front wall of the room as a projection screen for displays ranging from plotting charts that show the spacecraft's location, to actual television pictures such as the scenes from the Moon's surface.

Other display units built into the wall show such things as elapsed time after launch, or time remaining before a maneuver or other event.

The information displayed, and on which the flight controllers base many of their decisions or recommendations, can be telemetry and tracking data relayed from Manned Space Flight Network stations and processed through the real-time computer complex, or it might be information—predicted time of upcoming events, for instance—derived through the computer, or even stored reference data based on simulated flights conducted as practice for the actual mission.

The consoles at which the flight controllers work in the MOCR, and those in many of the support rooms, include one or more TV screens and the necessary switches to let the controller view a data display on a number of different channels.

A library of prepared reference data is available to display static information, while digital-to-television display generators provide dynamic, or constantly changing, data.

Next issue: Behind the Scenes.

LOTS OF SUPPORT—The two moonwalkers on the big TV screen were supported from Earth by teams of flight controllers who got their support from unseen and unsung experts and equipment in the back rooms of Building 30, at other points around MSC, and at facilities scattered around the world. This shot happens to be of the Apollo 15 lunar EVA by Dave Scott and Jim Irwin as monitored by capcoms Joe Allen, Dick Gordon and Deke Slayton.

Collier Trophy Goes to Apollo 15 Crew, Gilruth

The Robert J. Collier Trophy, one of the national's oldest aviation awards, has been presented to the Apollo 15 crew in a dinner ceremony in Washington, D.C.

Vice President Spiro Agnew presented the Collier Trophy to David R. Scott, James B. Irwin and Alfred M. Worden "for demonstrating superb skill and courage, and to Dr. Robert R. Gilruth as representative of the engineering genius of the manned space flight team, culminating in Apollo 15—man's most prolonged and scientifically productive lunar mission."

Apollo 15 landed in the Hadley Rille region of the Moon in July 1971, for three days of extensive exploration and first use of the electric-powered Lunar Roving Vehicle.

The Collier Trophy was established in 1912 by the Aero Club of America—later to become the National Aeronautic Association—for the greatest achievement in aeronautics or astronautics in the United States toward improving performance, efficiency and safety of air or space vehicles.

Fog Caused Crash Killing Two Pilots

A patch of fog has been blamed for the January 20 aircraft crash that killed two MSC pilots.

The accident investigation board concluded that a drifting fog bank obscured the runway approach for Stuart M. Present and Mark C. Heath, who were flying instrument approaches at an Air Force auxiliary landing strip on Matagorda Island.

The board also reported that Present, the pilot at the time, apparently attempted a pullout on discovering he had mistaken the drifting fog for a cloud bank.

The plane crashed 3750 feet short of the runway.

The board's report said that analysis of the plane's instruments and recorders showed that all systems, including the altimeter, were functioning normally.

Relax, John Young, Your NEBA Policy Won't Be Cancelled for Late Payment

"Your NEBA insurance won't be cancelled, John."

That's in reply to the note John Young attached to his NASA Employees Benefit Association insurance payment.

He had found the premium-due notice in his mail when he got back from Apollo 16, so he wrote:

"Dear NASA Emp. Ben. Assn:
Please do not cancel me. I was on the moon.
Sincerely,
(signed) John Young"

Frank P. Parker, NEBA secretary-treasurer, received the insurance premium with the note. The latter now is framed and on display in Parker's office in Room 480 of Building 2.

Standard procedure on premiums due, Parker says, is to contact anyone who has not made his payment after a second notice has been sent.

If the insured is on travel or leave, arrangements are made for continuation of the coverage; that holds also for various other extenuating circumstances.

Parker further says "Thanks for the nice note, Capt. Young, but we wouldn't have cancelled without calling you first.

"By the way—what did you say is the area code for the moon?"

CERNAN'S CROAKER — What Gene stretched out over the rocks to photograph was a patiently posing frog. The MSC photographer snapped the astronaut shooting the frog, but froggy seems unimpressed with all the attention.

Cost Reduction Corner

Some 61 Skylab flight data checklists were being distributed to 14 Skylab and Apollo offices. Each checklist required daily updating.

Connie Critzos of Skylab and Herbert Tash of Apollo, following up an earlier money-saver they had originated, notified each office that two constantly updated file copies were maintained and were available for reference.

The distribution list was cut enough to save John Q. Public $4104 a year.

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