

# Agency will survey the Earth's Resources

A wide variety of the natural resources of Earth and man's management of them will be studied by an initial group of scientists tentatively chosen by the National Aeronautics and Space Administration to analyze data to be gathered by two Earth-orbiting spacecraft.

The spacecraft are the first Earth Resources Technology Satellite (ERTS-A) and the manned Skylab which will carry an Earth Resources Experiment Package (EREP).

The objective of both ERTS and the EREP aboard Skylab is to obtain multispectral images of the surface of the Earth with high resolution remote sensors and to process and distribute the images to scientific users in a wide variety of disciplines.

The initial group of experimenters are from 28 states and the District of Columbia and from 22 foreign countries.

More than 700 scientists submitted proposals last June for experiments with ERTS and EREP data, the greatest number ever received by NASA.

In the United States, the initial experiments will study the feasibility of remote sensing from satellites in gathering information on

a great variety of projects including: soil and forest conservation, insect control, inventory of resources, sources of pollution, large scale climate and weather effects, and ecological effects due to man's development efforts.

ERTS-A is a 950 kilogram (2100-pound) automated satellite to be launched in the spring of 1972 by a Delta rocket from the Western Test Range into a Sun-synchronous, near polar orbit at an altitude of 910 kilometers (565 miles). ERTS-A will carry a return beam vidicon camera system using three vidicon cameras in three spectral bands and a multispectral scanner to sense in four spectral bands.

Data from ERTS will be telemetered to ground stations and then relayed to the NASA Data Processing Facility (NDPF) at the Goddard Space Flight Center, Greenbelt, Maryland. It is anticipated that a combination of more than 300,000 photographs and digital images will be produced each week. At the NDPF, the bulk of the ERTS data will be processed within ten days and made available to experimenters.

Skylab is an 86,000 kilogram (190,000-pound) spacecraft which will be launched unmanned in the spring of 1973 by a Saturn V from Cape Kennedy into a 435 kilometer (270 mile) orbit with an inclination of 50°. It will be manned by three-man crews for one 28-day and two 56-day periods over about eight months.

The EREP includes a six-camera multispectral photographic facility, an infrared spectrometer, a multispectral scanner, a K-band microwave radiometer, scatterometer, altimeter and L-band microwave radiometer.

At the end of each manned visit to Skylab, data from EREP will be returned to Earth in the command module on photographic film and digital data on magnetic tape. Processing of the data will be at the Manned Spacecraft Center which will distribute the data to experimenters.

## Lunar Scientists to meet at MSC in January '72

The Third Annual Lunar Science Conference will be held January 10-13 at the NASA Manned Spacecraft Center, Houston and will cover scientific results from the Apollo 14 and 15 missions.

The conference is expected to draw some 800 scientists from the United States and foreign countries who have been involved in lunar studies and analysis of returned lunar samples.

Major conference sessions will be held in the Building 1 Auditorium at MSC. Working space will be provided in the auditorium for news media making advance reservations.

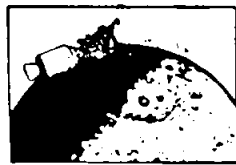


NASA Administrator James Fletcher pins the NASA Exceptional Scientific Achievement Medal on MSC Director of Science and Applications Anthony J. Calio in Washington ceremonies last week. (See story at right.)

# ROUNDUP

NASA MANNED SPACECRAFT CENTER

HOUSTON, TEXAS



VOL. 10 NO. 26

November 5, 1971



YUGOSLAVIAN PRESIDENT Josip Broz Tito and his wife, along with a host of Yugoslavian government officials, visited the Center last Saturday for a tour of the exhibits area and the mission control center. President Tito (center, dark glasses), shown here at the flight dynamics console in the control center, is surrounded by (l. to r.) his wife, an interpreter, MSC Director Robert R. Gilruth, and Flight Director Glynn S. Lunney (far right). The President and his wife also toured the Medical Center complex in Houston during their weekend stay here.

## Mariner to reach Mars next week

A mysterious glitch in Mariner 9's flight attitude Tuesday briefly had flight controllers at Jet Propulsion Laboratory worried when the spacecraft's star tracker apparently lost lock with its guiding star, Canopus.

Ground commands—taking six minutes to cross the 66 million miles of space to Mariner—pointed the craft back to Canopus. At Roundup press time, Mariner 9 was slightly over a million miles from Mars. Mariner 9 will be inserted into Mars orbit November 13 to begin relaying photos and data back to Earth.

NASA's latest Mars spacecraft, launched from Pad 36 at Kennedy on May 30, is due to arrive Saturday, November 13. Some 5,000

## Calio wins award for Science effort

Anthony J. Calio, Director of Science and Applications, received NASA's Exceptional Scientific Achievement Medal in ceremonies held last week in Washington, D.C.

The citation reads, "For his outstanding accomplishments in managing the Apollo lunar science program. His exceptional leadership and professional dedication have contributed significantly to the successful conduct of lunar surface scientific experiments and the analysis of returned lunar samples."

Calio was named as head of the Science and Applications Directorate in October 1969.

photographs and scientific experiments from as close as 1,200 kilometers (750 miles) should shed light on the "wave of darkening" controversy.

Mariner project scientists are divided on the issue. No Earth-bound observer denies that there is a darkening in spots, if not in a wave, on the face of Mars, but, as one prominent astronomer recently advised, even these dark spots could be an optical illusion.

"The darkening may well be caused by changes in optical geometry (how we look at the planet) rather than by anything that's occurring on Mars," Dr. William Baum of Lowell observatory in Flagstaff, Arizona, told scientists at a recent meeting at Caltech's Jet Propulsion Lab (JPL), which is managing the Mariner Mars project for NASA.

Mariner 9 will arrive at Mars during the apparent peak of the darkening period (late spring) in the southern hemisphere. It should settle the question whether the darkening is on the surface, in the atmosphere, or is indeed, an optical illusion.

In the past, observing the wave as a gradual spread across Mars' face, some astronomers believed the wave to be vegetation.

However, the darkening has since been observed in patches, not necessarily adjacent to each other. This has given rise to a theory that dust storms whipped by high winds cause the changes.

Whether or not Mars could have vegetation — seemingly impossible in light of 1969 Mariner photographs — dark spots might

indicate the presence of ozone according to Dr. Charles A. Barth, University of Colorado physicist.

"If we can find ozone in the equatorial regions," Barth said, "it could be an affirmative sign that some oxygen producing plant or life might be present."

The journey to the "red planet" will take 167 days over an arcing trajectory of 397 kilometers (248 million miles). When it goes into orbit next Saturday, Mariner will be some 137 kilometers (85 million miles) away from Earth.

Prior to going into orbit, Mariner will transmit approach pictures. Those pictures will be (See MARINER, page 2)

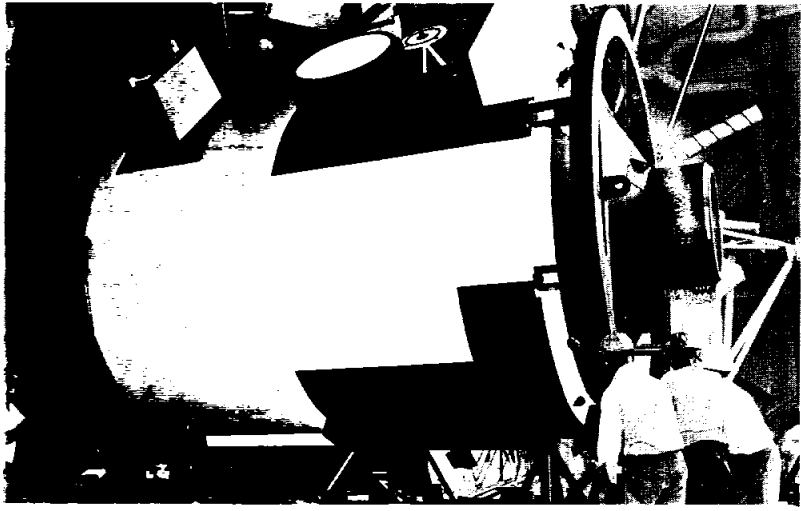
## NASA sets student Project for Skylab

NASA has selected and awarded The National Science Teachers Association, Washington, D.C. a contract for management and operation of the Skylab Student Project.

The Skylab Student Project is designed to stimulate interest in science and technology by directly involving students in space research.

The National Science Teachers Association will provide the personnel, materials, facilities and services necessary for notification of the student and educational community of the opportunity and method of participating in Skylab, develop procedures for evaluation of proposals based on educational

(See STUDENT, page 4)



**MDA ON THE MOVE**—A training model of Skylab's Multiple Docking Adapter (MDA), with which the command modules carrying Skylab will dock, was recently moved into Building 5. Skylab's Apollo Telescope Mount (ATM) will be attached to the docking adapter in actual flight. In addition to the MDA, trainers for the Orbital Work Shop (OWS), Airlock Module (AM), command module and ATM are now installed in Building 5 where astronaut crews will begin training within the next few months.

## Combined Federal Campaign tally in

At *Roundup* press time, MSC employees had contributed close to \$126,000 to the 1972 Combined Federal Campaign. That figure is 110 percent of the Center's monetary goal.

Approximately 94 percent of the employees donated to the campaign, a combination of the United Fund, National Health Agencies, and International Service Agencies fund drives.

Today (Friday, November 5) is the final day to contribute. Roy Aldridge (x5419), coordinator for the campaign at MSC, will accept campaign donations through the close of business this afternoon. Those of you who may not have contributed thus far may still give "the one gift that helps many."

## V. Kerner dies

Vernon H. Kerner, an engineer in the Project Support Division of the Medical Research and Operations Directorate, died on October 28 at the age of 45. Cause of death was a heart attack.

Kerner began working at MSC in October 1964. He came here from St. Louis.

He is survived by his wife Eileen and four children, Sandra, Vernon, David, and Cynthia.

## Mariner mission

(Continued from page 1)

played back through JPL beginning on Thursday, November 11. Orbit insertion is scheduled for between 5:30 and 7:30 p.m. CST on November 13. After insertion, Mariner will send about 60 pictures a day between 3:00 p.m. and 12 midnight CST.

Network television will cover many of the events between November 11 and 14. Check your newspapers for times.

During its 90-day basic mission, Mariner will radio to Earth some 25 to 30 billion bits of scientific information and will map more than 70 percent of the entire Martian surface.

Federal agencies in a six-county area around Houston received the United Fund trophy given annually to the organization having the highest participation and the highest percentage of or exceeding its money goal. The award was presented last week at the Astroworld Hotel in Houston.

## EAA Calendar

- Shrine Circus Night for NASA employees will be on November 14, 1971 at the Coliseum in Houston. Starting on October 27, some \$5 reserved tickets will be on sale for \$2.50. Tickets will be available from your EAA Rep. and Kay Anderson.

- Children's Christmas Party will be held on December 4, 1971 in the MSC Auditorium. Tickets will go on sale November 20 for \$1.00.

- MSC Christmas Dance scheduled this year for December 11 at the Shamrock-Hilton's Grand Ball Room. Tickets are \$5 per person and includes a Midnight breakfast. Music will be by the Don Cannon Orchestra and Thursday's Children. No bottles, please. Group reservations can be made through Joanne Sanchez, ext. 4303. Tickets will go on sale November 15.

## U. S. - Russian Meeting ends

The following statement on a Joint US/USSR Space Biology and Medicine Working Group meeting was released by the American Embassy in Moscow on October 14.

"A Joint Working Group established under a January 1971 agreement between the U.S. National Aeronautics and Space Administration and the Academy of Sciences of the USSR today completed four days of meetings in Moscow devoted to extending cooperation in space biology and medicine between the United States and the Soviet Union.

"The Working Group began an exchange of data and results from the Soyuz and Apollo programs and developed recommendations and procedures for expanded exchange of information in space

## Lederer discusses drug problems

Safety experts of the world's leading airlines and aircraft manufacturers were given cues on observing signs of drug abuse among employees by Jerome Lederer, the National Aeronautics and Space Administration's Director of Safety.

Erratic behavior, stupor, confusion, frequent agitation, lack of coordination, excessive absence and unsatisfactory work performance were stated as signs of potential drug problems in employees. Lederer recommended that supervisors be alert to such behavior and discreetly ask if the employee has a health problem or is on any kind of medication, without suggesting suspicion of drug abuse. Lederer's "action list for supervisors" included making careful notes on employees behavior, recommending consultation with the company medical staff or his personal physician, and other follow-up procedures.

Lederer provided guidelines for supervisors of ground crews and manufacturing plants to be on the alert for "experimenters" with hard drugs such as heroin, cocaine, morphine and other opiates, who may be found in industry and remain for some time undetected in the work force. He said that habitual users of "hard drugs" are not usually found in industry because they are largely unemployable.

Speaking before the 24th International Air Safety Seminar in Mexico City, Oct. 21, Lederer pointed out that "drug addiction is not yet a discernible problem among NASA and its contractor employees of which there are now about 160,000. But the work force of the future will involve many young people who have experienced hard drugs."

Lederer, an internationally recognized authority on air and space flight safety, joined the NASA Office of Manned Space Flight in June 1967 where he directed its safety programs.

biology and medicine.

"Recommendations of the Working Group, which was co-chaired by Dr. N. N. Gurovskiy for the Academy and Dr. Charles A. Berry for NASA, will be forwarded to President M. V. Keldysh and Dr. George M. Low, Deputy Administrator of NASA, for their consideration. Text of the recommendations will be published when approved, probably in about two months."

**Zero-In  
On Safety**



## Raines, Arabian named to board

Martin L. Raines and Donald D. Arabian of MSC have been named to a review board to study malfunctions in the Delta launch vehicle on its last two missions.

On September 29, Delta failed to put an Orbiting Solar Observatory (OSO-7) into its planned orbit. On October 21, the Improved Tiros Operational System (ITOS-B) failed to achieve after launch by Delta 86—the first Delta failure in 22 launches of Tiros-class weather satellites.

NASA Associate Administrator for Space Science and Applications Dr. John E. Naugle appointed the Delta Launch Vehicle System Review Board to be chaired by Marshall Space Flight

Center deputy director Dr. William Lucas. The board will report its findings to Naugle.

## Europe, anyone?

Because this year's trip to Europe was so successful, the NASA Employees Club at Headquarters has scheduled a European trip for 1972.

The flight will leave Washington (Dulles Airport) on May 28 for London and will return from Paris on June 18. The trip will offer the flight only and one or two optional tours.

For more information or to say, "Sign me up!" write to B. Maggin, NASA Headquarters, Code RG.

## Fletcher optimistic on Space in 70's

Dr. James C. Fletcher, NASA Administrator, discussed the space program for the Seventies in a recent address before the National Security Industrial Association. Some of the highlights of his speech are as follows:

"I am rather optimistic about the future, at least of NASA programs in both space and aeronautics.

"After some years of planning, we now believe that we have very sensible goals, we have good ongoing projects, and the approved new starts which, taken together, make a package which I think is worthy of the name, at this point at least, of 'America's Space Program for the Seventies.'

"I am impressed with the soundness of this new space program for the Seventies and I urge you to support it. I also believe very much that the country needs

it."

Dr. Fletcher also discussed his evaluation of some of the program's strengths.

"It is well planned and it is well balanced to meet basic national needs, including important national security needs.

"It does stress earth orbit as a new realm of prime importance and great opportunity, where America's capacity for world leadership will be tested not only in this decade but in the decades to follow.

"It promotes economic progress based on new technology.

"It is essential to the President's peace policies based on international cooperation.

Finally, "It is already part of America's destiny, as all of you can testify who watched the Apollo 15 operations on international television."

**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.

Editorial Staff: Sydni Shollenberger, 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

Fogger, Dyna-fog, 2/5 gal containers. Brenton, 488-4372.  
 Drapes, 1 pr custom lined, 144x82, dusty rose, \$20; Suitcase, ladies foldover, wardrobe, plaid cloth, \$9. Dorland, 488-3258.  
 Recorder, Sony-Matic TC 864, solid state, 4 track mono, portable, AC or battery, like new, \$125. Harris, 944-2131 after 6 pm.  
 Stereo, rcv/amp, AR 14 Heathkit, 30 watts, xln cndn, 4 yrs old, \$70. Mahle, 932-4369.  
 Drum set complete, 2 yrs old, offer over \$100. Schisser, 488-3797 after 5 pm.  
 Dresser, large, modern, cedarlined, huge mirror, \$45; and Headboard, king size, gold velvet, \$65. Corraeale, 877-2291.  
 Couch 7 1/2' traditional, used 1 mon, blue-green floral, \$200. Langdoc, 941-6729.  
 Furnace, 80,000 BTU, central; & A/C window unit, Admiral 2 ton. Brewer, 473-7355.  
 Piano, just tuned, \$200; Chair, gold, easy type, \$10; & Tables, step-end, leather tops \$10. Cox, 481-3605.  
 Rifle, Win 90, 22 auto, KG scope; & Shotgun, Gaiief 3" Mag, 12 ga, vent rib, \$78. Rodriguez, 488-5495.  
 Rifle, 30 cal M-1 carbine, 15 rd clip, \$80. Krpec, 474-2722.  
 Drum set, double bass, 2 bass, 2 wing toms, floor tom, snare, 4 cymbals, throne, xln cndn, \$225. 474-3420.  
 Suite, living room, 7 piece Spanish, 3 yrs old, good cndn, \$250. 482-1091.  
 Necklace & Earrings, jade, from Thailand, \$40; & Dress, long red velvet, \$20. Cox, 481-3605.  
 Go-kart, 3 HP, \$79; & Bike, 16" boy or girl, \$12. Vincze, 877-2237.  
 Tarpaulin, new 14x20, premium grade, \$25; & 4 Army Cots, \$2 each. Lines, 473-1332.  
 Material, 3 yds silk, 45" wide, gold and orchid, incl matching bag, \$15. Cox, 481-3605.  
 VW tires, 2(1.60x15), new cndn, \$7 each. Kilpatrick, 333-2165.  
 Bassinette, \$6; Gas Heater, portable, \$25; & Wonder Horse, large sz, \$16. Fischer, 472-6910.  
 TV, RCA 21" console, B&W, colonial, 63 model, stored since 66. Matties, 944-3586.  
 Go-kart, 7 HP, West Bend 2 cy eng, xln cndn, \$125. Matties, 944-3586.  
 Pistol, 22 cal, Hi Standard Sport King, 4 1/2" bbl, xtr clip, holster, perfect, \$55. Musgrove, 488-3966.  
 Rifle, 22 LR, Glenfield, auto, Bushnell 2.5X scope, \$40; & Pistol, 22 LR, auto, Ruger Standard, spare clip, \$45. Campbell, 333-3368.  
 Camera, 35mm, Konica EE-Matic, rangefinder, case, filters, \$39; & Tripod, new, 8 sections, case, \$8. Campbell, 333-3368.  
 Tent camper, 70 Lark, stove, sink, icebox, 12 gal water system, spare tire, sleeps 8, good cndn, \$1000. Nelson, 932-4078.  
 Tablecloth, crocheted oval 66x80", cream, \$30. Gonzalez, 488-5178.  
 Tire, new W/W, J78x14, Firestone Champion Deluxe, belted, \$30. Brahm, 946-4210.  
 Candelier, round contemporary, 2 matching wall lights, colored glass/brass trif. Vander Voort, 333-4626.  
 Drapes, 3 pr beige antique, satin lined, 1 yr old, Vander Voort, 333-4626.  
 Amplifier, Kustom 200 watts, dual channel

bass, 2 speakers-15". Burt, 333-2117.  
 Refrigerator/Freezer, 17.5 cu ft combo, \$75; Wig, light auburn, \$12.50. Thompson, 932-3653.  
 Bike, boys 5 speed, banana seat, xln cndn, \$40; & Telescope, 200 power, \$10. Vincze, 877-2237.  
 Rifle, Remington 30-06, semi-auto, Monte Carlo stock, \$130. Guerra, 487-1204.  
 Baby car seat, like new, head rest, deluxe, \$7. Ward, 481-2266.  
 Pistol, Ruger Mark I, micro click sights, Leopold 2X scope, holster, case, xln cndn, \$75. Pruet, 473-1343.  
 Saxophone, Buescher alto, xln cndn, \$200. Hudson, 534-2180.  
 Golf clubs, Spaulding Pro Model, irons & woods, good cndn, rite price. Lea, 488-2597.  
 Central air and heating system, Johnson 3 ton, complete less ducting, good cndn, \$300. Romere, 481-2718.  
 Oven and rangetop, Nutone gas builtin, xln cndn, Romere, 481-2718.  
 Engine, 396, complete short block, heads, manifold, no lifters, \$100. Schlei, 644-5712.  
 Organ, Wurlitzer Electronic, Model 4140, solid state, full 2 manual keyboard, oiled walnut cabinet & bench, new cndn. Cree, 481-1158.  
 Scuba tank, J-valve, pack, \$60; Regulator, \$45; also, life vest, weight belt, gauges, compass, spear gun. Ross, 946-6738.  
 Cornet, Old's, xln cndn, case & music stand, \$95. Fuller, 488-3985.  
 Bedroom suite, incl box springs and mattress; also, studio desk and studio sofa bed. Whitnah, 481-2854.  
 Fly retractable gear aircraft w/the Aero Club, Inc. for NASA and contractor employees and their families. K and P-model Bonanzas only \$17 and \$18/hour wet, plus initiation fee and monthly dues. McCoy, 944-5574 or Chriswell, 488-5200.  
 Golf clubs, Ram, aluminum shaft, 1-4 woods, 2-9 irons, wedge, bag. Gordon, 483-5111.

### VEHICLES

70 VW, sedan, white w/red interior, air, under warranty, 17,000 mi, xln cndn. Benson, 481-0126.  
 65 Mustang, 6 cyl, auto, air, xln cndn, \$100 under retail, \$650. Ferguson, 482-3241.  
 66 Sunbeam Tiger, V-8, both tops, xln cndn, \$1100. Patterson, 482-2011 or 333-3867.  
 67 Cougar XR-7, GT package, power, disc brakes, 390 CID eng, 4 speed, leather, air, styled wheels, radial tires, radio, tape, \$1750. Mandell, 877-2925.  
 69 Buick Electra, 2 dr hardtop, 23,000 mi, xln cndn, \$2500. Christian, 483-4511.  
 64 Pontiac, 9 pass wagon, good clean car, \$500. Walsh, 946-0441.  
 61 Falcon, Econoline Van, paneled. Brewer, 473-7355.  
 69 Opel Kadett, radio, 4 spd, great tires & paint, xln cndn, \$1150. Allgeier, 333-4827 after 12 am.  
 66 Toyota, good cndn, new tires and seat covers, \$125 under retail, \$650. Fitzgerald, 482-7143.  
 Motorbike, Honda Mini-Trail 500, xln cndn. Miller, 946-8195.  
 63 Chevy II SS, 2 dr, 6 cyl, good cndn, overhauled 71, \$400. Stamps, 471-0770.  
 64 Rambler Classic, 4 dr, low mile, new tires, xln cndn, \$400. Cunningham, 488-1390.  
 61 Cadillac, power, new tires, good cndn, 50,000 miles, \$400. Wiseman, Dickinson 534-3802.  
 62 Olds 88, eng & trans good shape, xln tires. Hooper, 488-4120.  
 70 Buick Rivera, like new, see to appreciate. Weingartner, 488-4359.  
 68 T-Bird, power, air, radials, xln cndn, new car on order. Parker, 333-2253.  
 63 Buick Skylark, air, auto, power steering, radio, \$165. Kaupp, 941-1755.  
 Motorcycle, Kawasaki, Big Horn 350, \$600. Campbell, 488-3635.  
 65 Chevrolet Impala, 2dr H/T, V-8, auto, air, P/S, or owner, \$675. Nicholas, 944-3656.  
 63 Corvair, 44,000 miles, \$250. Moore, 488-4089.  
 69 Dodge Charger, air, 4 spd, positraction, mag wheels, 29,000 mi, \$1950. Allen, 481-3637.  
 Minibike, 3 1/2 HP, rear shocks, \$75. Clanton, 482-7187.  
 68 Corvette, white/red interior, 4 speed, loaded, tops, xln cndn, 350 HP. White, 641-0015.  
 63 VW, new engine in 67, xtra clean, radio, good tires, one owner, maintenance log, spare parts. Smith, 471-2419.  
 67 Mustang V-8, AC, standard, brown vinyl interior, 45,000 mi, make offer. Pawlowski, 333-2095.

### REAL ESTATE

Rent house, 3 BR brick, 1 1/2 baths, 2 car garage, big back yard, trees, \$165/mon. Dickinson 966-1149.  
 Lease house, Swan Lagoon, 4/2/2, formal LR & DR, den, electric kitchen w/breakfast room, \$265/mon. Andrich, 488-2546.  
 House for sale, Swan Lagoon, 4/2/2, formal LR & DR, den w/fireplace, electric kitchen w/breakfast room, large equity, 6% loan. Andrich, 488-2546.  
 House for sale, Hillcrest Village (Alvin),

3/2/2 Colonial, xtr large lot, formal LR & DR, 6% assumption. Morrison, 331-4587.  
 Lot for sale, Dickinson, 80x200', wooded, all utilities, \$4599. Plauche, 474-2660.  
 House for sale, Clear Lake City, 2BR, fireplace, fenced yard, 2 car garage, Roman bath, landscaped, equity reduced, \$154/mon payments. Burton, 488-3751.  
**PETS**  
 Dog, part German Shepherd, 4 mon old, all shots, free. Schlei, 644-5712.  
 Skunk, pet, female, no BO/deoderized, 5 mon old, wire/cage and house, \$33. Clanton, 482-7187.

### BOATS

Boat, Holmes fiberglass, 19', 150HP Mercury, pwr tilt trailer, depthmeter, compass, safety eq & extras, \$2295. Hudson, 333-4475.  
 Sailboats, Lido 14, info on used Lido's includes cndn & price. Hoover, 877-3366.  
 Canoe, 17' square stern; 2 1/2 HP outboard; & 35 HP outboard motor. Kalk, 932-4207.  
 Raft, 2 man, inflatable, alum oars, fine for kids, \$15. Griffin, 333-3512.  
 Speedboat, 16', 120HP outboard, trailer and all 71 gear, pro ski bar, mint cndn, \$3795. Bland, 333-4580.  
 Fishing and skiing boat, 17', tri-hull, 120 HP outboard, trailer and all gear, \$2495. Bland, 333-4580.  
 Sailboat, Lido 14, all equipment, trailer, \$900. Campbell, 488-3635.  
**WANTED**  
 Mattress & Box springs, twin, xln cndn only. Baker, 944-2549.  
 Drafting table, good cndn, for son in school. Crawford, 427-5068.

## Lovell elected as Class President

Captain James A. Lovell, Astronaut and Deputy Director of the Science and Applications Directorate at MSC, has been elected president of his class at the Harvard Business School where he is enrolled in the Advanced Management Program. He has been studying there since September 12th.

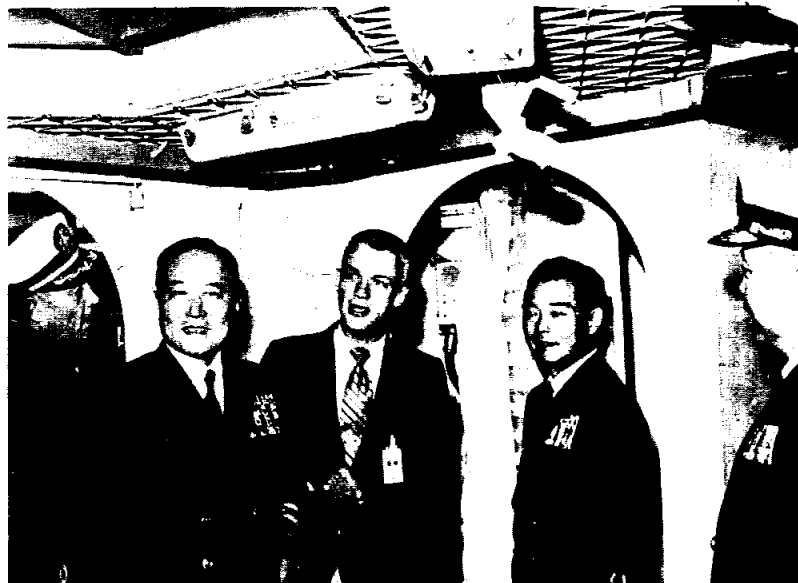
He is one of 162 senior executives from business and government organizations who are preparing for the responsibilities of top leadership.

Another astronaut, Frank Borman, who has become vice president for operations for Eastern Airlines, was elected president of his Advanced Management class a year ago.

## Joint session set

Philip H. Whitbeck, Director of Administration and Program Support at MSC, will be the principal speaker at a joint dinner meeting of the National Contract Management Association (NCMA) and Federal Government Accountants Association (FGAA), on Tuesday, November 16,

Mr. Whitbeck's topic will be "Public Service in the Future." The meeting will be held at the Nassau Bay Motor Inn, NASA Road 1. The social hour will begin at 5:30 p.m. and dinner will be served at 7 p.m. The menu will be steak with trimmings—Cost \$5.00. Guests are welcome and reservations may be obtained by contacting Evon Collins, x5336 or Ray Kaufman, x5867 by noon November 15.



NAVAL VISITOR—Admiral Soong Chang-Chi (2nd from left), Commander-in-Chief, Chinese Navy, Taiwan, and his party were recent guests at MSC. The group is shown here viewing the new Skylab trainer in Building 5. Astronaut Bruce McCandless (center) explains some of the features of the trainer.

## SPACE BENEFITS? HERE'S ANOTHER ONE

### NASA develops new surgery device

A new instrument for eye surgery that may greatly simplify the removal of cataracts—an operation which many people face—has been developed by NASA researchers working with Dr. William J. McGannon, a prominent ophthalmologist in Cleveland, Ohio.  
 The small hand-held instrument uses a combination of high frequency vibrations with a small pumping mechanism to liquify and remove cataract and lens material. It has been successfully tested on the eyes of animals.

Dr. John C. Evvard, Donald J. Vargo, John Pavlik, and Frank Kuchta of Lewis Research Center developed the instrument in a cooperative program with Dr. McGannon. Patent procedures by NASA are underway.

At present, a cataract surgery is a very delicate operation. It requires that a semi-circular incision be made over the lens of the eye, then stitched after the cataract and lens are removed. This procedure often takes up to an hour, with convalescence lasting up to eight weeks.

The new instrument, about the size of an electric toothbrush, makes only a small puncture in the eye and would minimize the problem of stitching in most cases. "The purpose of the new

instrument is to reduce the operating time and the patient's convalescent period," Dr. McGannon said.

He sees a world-wide application of the technique once it has been perfected for humans. He explained that practically everyone over age 65 has some opacification of the lens, and the problem is particularly severe in countries where medical treatment is not accessible.

## Linguists needed

If you or a member of your family speak a language other than English, the Lions Clubs of the Houston area are asking for your help.

Volunteers to serve as interpreters at hospitals in Houston are badly needed. Many people from foreign countries come to Houston for surgery. These people are often apprehensive, frightened, and lonely for they may not have anyone to explain in their native language what is going on and why.

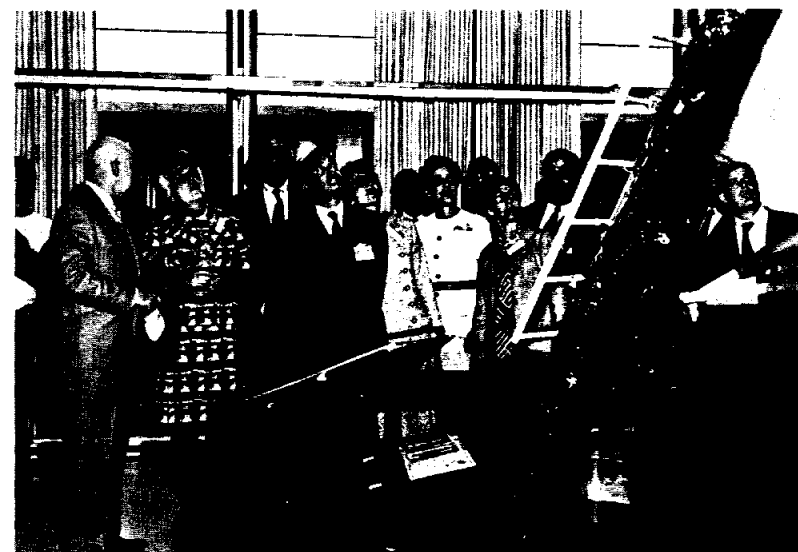
If you wish to contribute your linguistic skills, send name, address, phone number, and the language you speak to H. T. Glicker, c/o Bay Area Lions Club, P. O. Box 58252, Houston 77058.

## Jimmy Warren Memorial Bowling League BOWLING STANDINGS

Chokers	23	9
Bit Pickers	20	12
Alley Oops	19	13
Hexes	17	15
Pin Pounders	17	15
Team #14	17	15
Spoilers	16	16
Mixers	16	16
Fabricators	16	16
Achievers	15	17
Hertz	13	19
Splitters	13	19
Ball Busters	13	19
Leftovers	9	23

### Achievements To-Date

- High Team Set - Pin Pounders - 3215
- High Team Game - Pin Pounders - 1095
- High Individual Set - C. Skillman - 695 (Bit Pickers)
- High Individual Game - Burghdoff - 288 (Hertz)
- Oct. 28 Individual Achievements:
  - High Individual Set - J. Kochner - 650 (Pin Pounders)
  - High Individual Game - J. Kochner - 264 (Pin Pounders).



UNITED NATIONS AMBASSADORS—MSC Director Robert R. Gilruth, left, explains features of the Apollo lunar module to a group of United Nations ambassadors and their wives who visited MSC October 24. The group was led by US Ambassador George Bush and included UN ambassadors from Belgium, Yugoslavia, New Zealand and Egypt.

## NASA technology Saves two lives in Alaskan rescue

ATS—1 (Applications Technology Satellite), which will celebrate its fifth birthday in space in December, recently played a vital role in saving the life of one woman in Alaska and in relieving another seriously ill patient on the same day.

ATS functions as a switchboard-in-the-sky in a statewide Alaskan communications experiment under a cooperative program between NASA, Alaska, and the Department of Health, Education, and Welfare.

During a routine educational program via ATS in which doctors were instructing medical aides in remote villages, two emergencies were reported. A nurse on the village of Chalkyitsik was attending a pregnant woman who was hemorrhaging severely. In Anatuuk Pass, another woman was undergoing an appendicitis attack.

Notified of the emergencies, Goddard Space Flight Center kept the satellite in operation through most of the night.

An Alaskan physician provided, almost simultaneously, via the satellite, instructions to the nurse in Chalkyitsik and to an aide in Anatuuk.

Both patients survived the night and were successfully transferred to hospitals in nearby towns the next day.

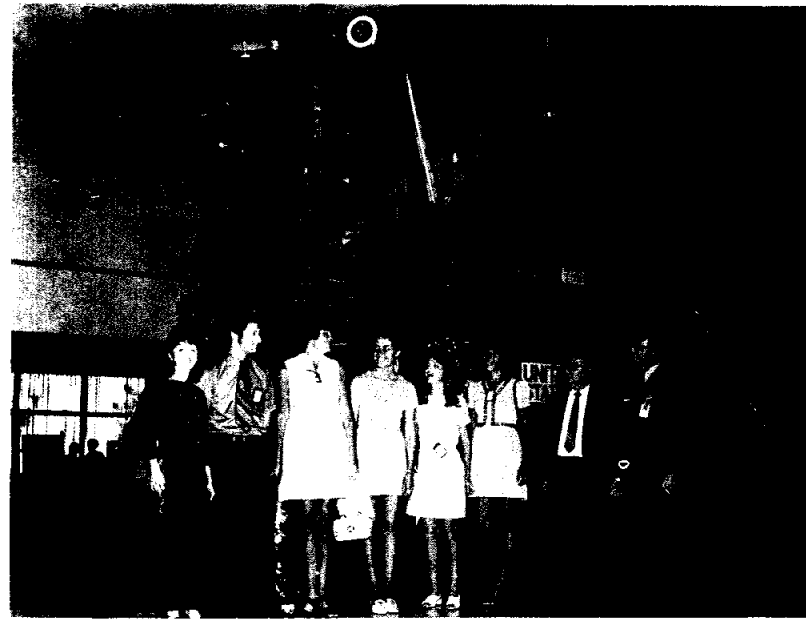
ATS—1 is used five hours each night, five days per week, for biomedical consultation between physicians and medical aides in the field and for medical educational programming in cooperation with Stanford University.

## Poetry for the Young in Heart

These poems/rhymes were written by Mrs. Margaret Ferris, resident of a Presbyterian retirement home in St. Paul, Minnesota. Mrs. Ferris celebrated her 91st birthday on October 1, 1971. In spite of age and failing eyesight, she still thrilled to the moon landing of Apollo 15. As great a thrill, she says, as that she experienced as a young girl "when the fire horses charged from the fire station to stand under their harness racks waiting to be hitched to the fire apparatus in response to the alarm bell."

### PROGRESS

In '71 on a July Day  
We watched the Astronauts on their way  
On a big color TV screen  
They moved along as in a dream.  
In their Land Rover, they covered ground,  
Looking for new things, all around.  
This tests the understanding of mankind  
Wondering what these men may find.  
But on the moon, our flag was seen  
In color on our TV screen.  
When Columbus crossed the Atlantic Ocean  
Wise men called it "A silly notion".  
When wagon trains travelled to the West  
Many people said - "It is not best".  
Explorers added fame to their roles  
By finding both the North and the South Poles.  
What value is a land of ice and snow?



COMMISSIONERS VISIT—MSC's program for hiring the handicapped inspired a recent visit by members of the Vocational Rehabilitation Commission of Houston. From left are Jeanette Goodwin, Les Sanders, Polly Walton, Marty Gregory, Margaret Proctor, Joyce Heinsohn, Art Neumeyer, and Merv Hughes, MSC coordinator for employment of the handicapped.

## Apollo 16 Event timeline revealed

Apollo 16 Astronauts John W. Young, Thomas K. Mattingly II, and Charles M. Duke are set for liftoff from Kennedy Space Center at 12:03 p.m. CST March 17, 1972, with the objective of increasing man's knowledge of his solar system by studying the evolutionary records preserved on the Moon. Such records on Earth were long ago destroyed by natural events.

The astronauts are tentatively scheduled to begin the first of their three scientific expeditions on the Moon at about 8:18 p.m. CST, March 21, four hours after touching down at the Descartes landing site.

Exploration of the Descartes area will complement data gathered from earlier Apollo missions by sampling from two distinctive lunar formations, by placing another scientific experiment station on the lunar surface, and by conducting a series of experiments from lunar orbit and during trans-lunar and transearth flight. This will be the fifth U.S. manned lunar landing.

The second and third lunar surface expeditions are tentatively planned to begin at about 6:48 p.m. and 6:13 p.m. CST on March 22 and 23, respectively. Astronauts Young and Duke will ride the lunar roving vehicle on all three of the seven-hour trips. The lunar module is scheduled for lunar liftoff at 5:35 p.m. CST, March 24, after 73 hours on the Moon.

Scientific experiments in the Apollo command-service modules will be operated by Astronaut Mattingly during much of the 147 and one-half hours of lunar orbital flight.

Mattingly will maneuver outside the Apollo spacecraft to retrieve films from the service module experiment bay at about 3:33 p.m. CST, March 27, some 20 hours after beginning the return flight to Earth.

The planned splashdown point is about 9° South Latitude and 169.5° West Longitude in the Pacific Ocean at 3:14 p.m. CST, March 29. Total mission duration is 291 hours and 11 minutes.

The Descartes landing site is about 9 degrees south and 15.5 degrees east of the center of the Moon as viewed from Earth.

Spacecraft Commander is Navy Captain Young, who completed two Gemini and the Apollo 10 missions prior to this assignment. Command Module Pilot is Lieutenant Commander Mattingly and Lunar Module Pilot is Air Force Lieutenant Colonel Duke. Neither Mattingly nor Duke have flown in space before.

## Buy Saving Bonds For Christmas

Is what people did not know.  
There'll always be the doubting few  
Of any exploring of the new.  
Tho thru our minds these thoughts  
have whirled  
God's Blessings have enlarged our  
world.

Margaret Ferris  
July, 1971

### PROGRESS NUMBER 2

On August seven in '71  
Astronauts returned. Victory won.  
They splashed down in Pacific Sea  
All this we saw on our TV.  
On ship, the Chaplain offered prayer  
To thank Our God for His care.  
They brought back rocks and tales  
galore  
Of wonders on that far off shore.  
The doubters say it once again  
That is no place for mortal men.

Margaret Ferris  
August, 1971

## Everything you wanted to learn

(BUT WERE SCARED TO ASK)

Q. Is it true that last year's Christmas Dance was a bust?

A. Definitely not!

Q. Why then is this year's dance not being held in Galveston?

A. We're spreading the wealth of MSC excitement to Houston.

Q. Well, where and when will this year's dance be?

A. The action takes place at the Shamrock Hilton on Saturday, December 11 from 8:30 p.m. to 1:00 a.m.

Q. What about celebrating in groups?

A. That's the best way! Organize your group of revelers and give Joanne Sanchez (x4304) a call so she can arrange to keep your party together. For those who would rather stay off the highways after an evening of Christmas cheer, rooms are available at the Shamrock. Single rooms are \$13; double rooms, \$17. Call Joanne Sanchez for reservations.

Q. What about tickets?

A. Just see your EAA reps.

Ticket sales begin on November 15. Five dollars will buy you an evening of dancing, a midnight breakfast, and a commemorative coffee mug. Don't bring your own bottle; drinks will be served at \$1 each.

Q. Sounds great so far, but who will provide the musical vibrations?

A. Two groups will assure plenty of sound. Don Cannon's Orchestra will play traditional music, with Thursday's Children playing the sounds of today.

This year's theme is "Joy to the World," so be at the Shamrock and spread a little joy.

## ASQC announces November plans

The American Society for Quality Control (ASQC) will meet on Tuesday, November 9 at the Airport Inn on Airport Boulevard (near Hobby Airport).

Dr. W. R. Downs, technical assistant for advanced systems in the Structures and Mechanics Division, will address the group at 8:15 p.m. on the subject "Biology and Space."

The social hour will begin at 6:30 p.m., with dinner scheduled for 7:30. For dinner reservations, call Jack Cohen, x3578. If you plan to attend only the meeting, reservations are not necessary.

## For Photo buffs

Tomorrow and Sunday are the last days to see an exhibition at the Houston Museum of Fine Arts entitled "As Time Developed: Photography from 1840-1970."

Almost from its invention, the photograph has been accepted as an object which reveals the truth. The exhibition traces the generation of this attitude through photos from the last 130 years.

Lunar pictures are included in the historical exhibit.

## Student project set

(Continued from page 1)

value and develop certificates of participation and an awards system for entrants.

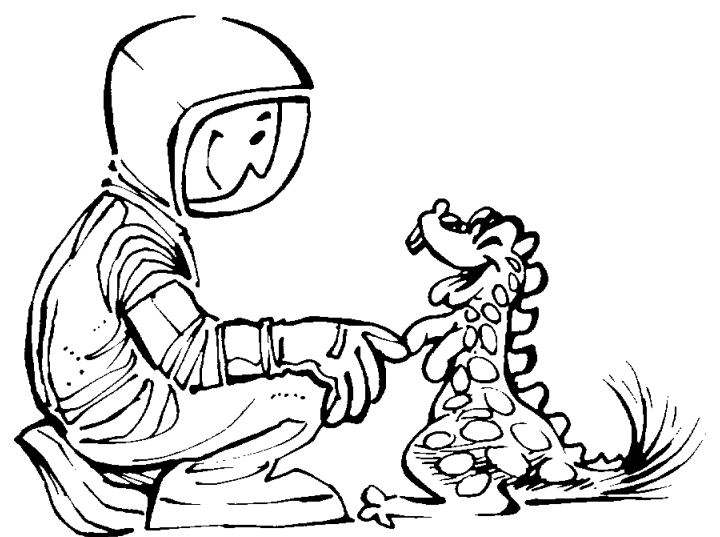
The Association will also develop plans and procedures for final selectees whose proposal ideas have been selected by NASA, and plan, organize and conduct a Skylab Student Education Conference for 25 national selectees at the Kennedy Space Center, Fla., at the time of the Skylab launch.

The program is open to all students in grades nine through twelve in U.S. public, private, parochial, and U.S. overseas schools.

TEN YEARS AGO—The Space Task Group, the organization charged with directing Project Mercury and other manned space programs, was renamed the Manned Spacecraft Center, with Dr. Robert R. Gilruth as Director.

## THE ASTRONUTS

courtesy of TRW and gordon a. south



Protect our vanishing species. Take an alligator to lunch!