

# CLA Town Meeting '76 Attacks Local Problems

Shuttle Program Manager Robert F. Thompson was keynote speaker at the recent Clear Lake Area Town Meeting '76 — a Horizon '76 Bicentennial project. Speaking on "The Space Program Outlook at the Bicentennial," Thompson pointed

out several challenges facing not only the community but all mankind. He emphasized the importance of dealing with the long-term effects of things we do now or postpone.



Thompson said that space research is one of few fields of research having the potential for solving many of the problems facing humanity during the next century.

While CLA Town Meeting '76 dealt mainly with local challenges, Thompson described the broader challenge of developing a replacement for the nation's dwindling supply of uranium and fossil fuels, and how failure to develop substitutes would mean severe energy shortages over the next 100 years.

Thompson outlined for the meeting NASA's research into solar energy conversion as a possible solution to long-term energy needs.

About 150 Clear Lake area people forwent their usual Saturday house chores and recreation to attend the day-long Town Meeting April 24 at the University of Houston Clear Lake Graduate Center. Workshop sessions following the opening meeting examined the economic, political and cultural challenges facing the area, and a booklet containing the Town Meeting's proposals was printed and distributed at day's end.

The booklet will be distributed to local government, civic and social organizations for their planning of future programs. Among the issues covered in the meeting and addressed in the booklet are subsidence and pollution, economic-political area fragmentation, natural resource use restrictions, and inter-community affairs planning.

Maurice Kennedy/CF3 (483-6226 or 488-5332) will provide additional information on Town Meeting results to interested

(Continued on page 2)

out several challenges facing not only the community but all mankind. He emphasized the importance of dealing with the long-term effects of things we do now or postpone.

Thompson said that space research is one of few fields of research having the potential for solving many of the problems facing humanity during the next century.

While CLA Town Meeting '76 dealt mainly with local challenges, Thompson described the broader challenge of developing a replacement

for the nation's dwindling supply of uranium and fossil fuels, and how failure to develop substitutes would mean severe energy shortages over the next 100 years.

Thompson outlined for the meeting NASA's research into solar energy conversion as a possible solution to long-term energy needs.

About 150 Clear Lake area people forwent their usual Saturday house chores and recreation to attend the day-long Town Meeting April 24 at the University of Houston Clear Lake Graduate Center. Workshop sessions following the opening meeting examined the economic, political and cultural challenges facing the area, and a booklet containing the Town Meeting's proposals was printed and distributed at day's end.

# ROUNDUP

NASA LYNDON B. JOHNSON SPACE CENTER

HOUSTON, TEXAS



VOL. 15 NO. 9

Friday, May 7, 1976



NEW MINI-ORBITER CARRIER — JSC Spacecraft Design Division's John Kiker, right, explains to NASA Center directors the newly-completed 1/40th scale Boeing 747 model he plans to use for more "mini-ALT" flights using radio-controlled models to demonstrate Orbiter/carrier separation. The Center directors held a two-day meeting at JSC April 21 and 22.

## JSC Air Meets EPA Standards

A status report on the Ambient Air Quality at JSC was given by a representative of the Life Sciences Directorate at a recent meeting of the JSC Pollution Control Committee. It was reported that ambient air in the JSC area remained well within the Environmental Protection Agency (EPA) national primary standards for suspended particulate matter and photochemical oxidants for calendar year 1975, and for the first calendar quarter of 1976.

(Continued on page 4)

## Freedom 7 Boosted US Into Manned Flight Era

A 15-minute flight 15 years ago this past Wednesday marked the entry of the United States into the age of manned space travel.

The 483-kilometer (302-mile) suborbital flight May 5, 1961 by Astronaut Alan B. Shepard Jr. was a major milestone in the nation's space program.

The flight (15 minutes and 22 seconds to be precise) of the Mercury spacecraft *Freedom 7* was America's first manned space venture.

Although the flight was unsophisticated when compared to the 30 manned missions which were to follow, it was a key mission for the infant NASA.

It was an important first step in a program which over the years has provided jobs for hundreds of thousands of American and foreign workers; has brought sights and sounds from around the world via communications satellites; has expanded our knowledge of the universe through space science and lunar and planetary satellites; and altered the way we live through Earth observation satellites.

Even with this first manned flight, the returns exceeded what was originally sought. The scientific objective of the Mercury flight, to determine the effects of weightlessness upon man, was achieved and in addition significant aerospace medical information was also obtained on other aspects of space flight.

The success of the *Freedom 7* flight also intensified public interest in the space program.

Less than three weeks later, on May 25, 1961, President John F. Kennedy in a special message to Congress on "urgent national needs" set as a national goal "landing a man on the Moon and returning him safely to Earth."

The goal was met and thousands of technical innovations are the payoff from our years in space.

The direct benefits to us on Earth include a broad spectrum ranging from prospecting for oil with land-resource satellites to medical diagnoses by computer, based on technology gained in the space program.

The distance the space program has traveled was cited by NASA

(Continued on page 2)

## Evans Leaves Navy, Enters Civil Service

Astronaut Ronald E. Evans (Captain USN) April 30 retired from the US Navy after 21 years service and will remain at NASA as a civilian in his current job.

Evans is one of the nineteen astronauts selected by NASA in April 1966. He served as a member of the astronaut support crews for Apollo 7 and 11 flights and as backup command module pilot for Apollo 14.

He was command module pilot on Apollo 17, the last manned flight to the moon, December 6-19, 1972. It was the longest manned lunar flight, 301 hours, 51 minutes.

Evans was accompanied on the flight by Eugene Cernan, spacecraft commander and Harrison H. Schmitt, lunar module pilot. While they were on the lunar surface Evans maintained a solo vigil in lunar orbit performing visual geological observations, hand-held photography of specific targets, and the control of cameras and highly sophisticated scientific equipment carried in the service module SIM-bay.

On the transearth phase of the flight he completed a 1 hour and 6 minute extravehicular activity successfully retrieving three camera cassettes from the SIM-bay of the service module.

He also served as backup command module pilot for the Apollo-Soyuz Test Project mission which was flown in July 1975.

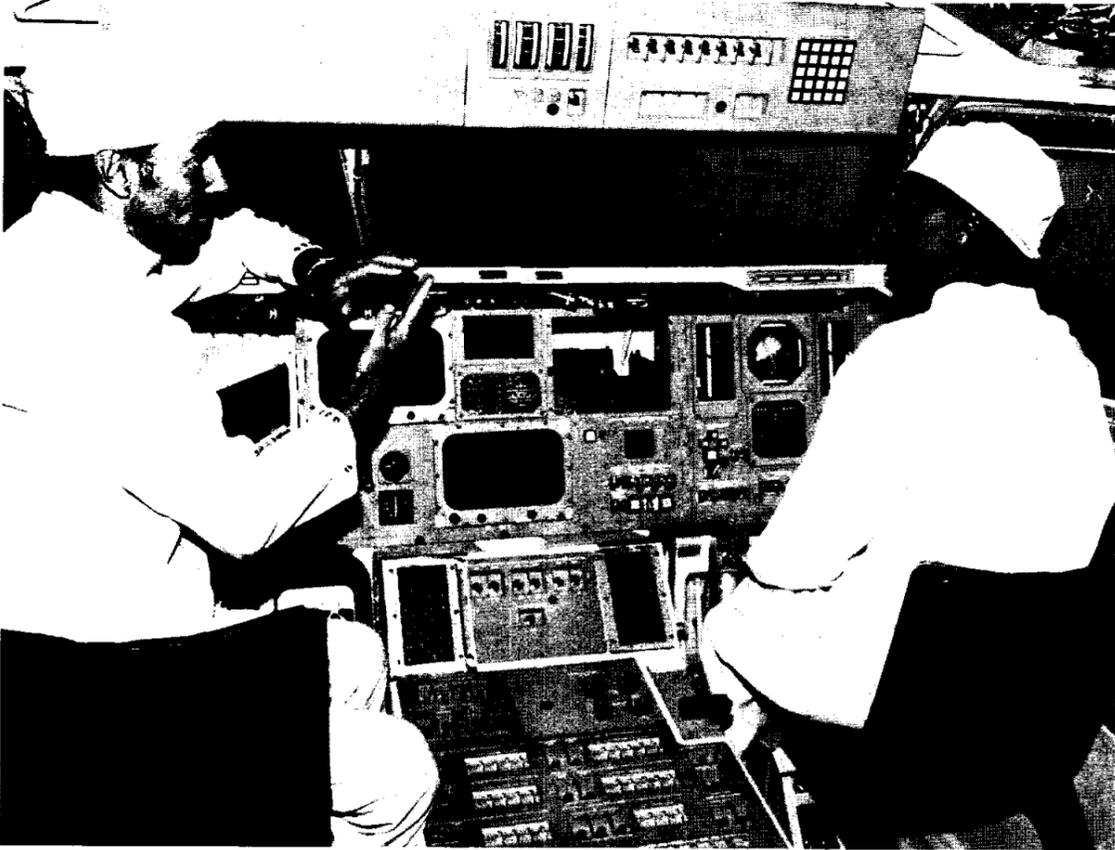
Evans current assignment is the responsibility for the operational aspects of the launch phase of the

Space Shuttle first orbital flight.

Two other NASA astronauts have retired from military service and remained with NASA. They are Gerald P. Carr (Colonel, USMC, Retired) September 1, 1975, and Alan L. Bean (Captain USN, Retired) October 1, 1975.



FROM SPACE FOOD TO HEATSHIELDS — A JSC exhibit, depicting the achievements of five Center women employees in sciences and engineering, was on display from March 10 through April 7 at the Museum of Natural Science Brown Auditorium. Sponsored by the UN Association and the Museum's Women's Guild, the exhibit was among women-in-science exhibits from 16 countries and from several universities, including the Baylor College of Medicine. Left to right are nutritionist Rita Rapp, mathematician Larue Burbank, endocrinologist Dr. Carolyn Leach, thermodynamicist Dorothy Lee, and aerodynamicist Ivy Hooks.



**COCKPIT CHECK** — Orbiter approach and landing test pilot Joe Engle explains to California Congresswoman Yvonne Burke how Space Shuttle Orbiter 101 will separate from the Boeing 747 carrier aircraft in tests next year. Engle briefed the congresswoman in 101's cockpit during her visit to the Rockwell International Space Division's Orbiter assembly plant at Palmdale, California where Orbiter 101 is four months away from rollout. (R1 photo)

# NASA Launches First Of Comsat Series

COMSTAR I-A, the first in a series of domestic communications satellites of COMSAT General Corp., was scheduled for launch yesterday at Cape Canaveral, Fla.

The Altas/Centaur vehicle and associated support activities was provided by NASA which will be reimbursed by COMSAT General, a subsidiary of Communications Satellite Corp. (COMSAT).

The COMSTAR spacecraft will be leased by COMSAT to the American Telephone and Telegraph Co. (AT&T) as part of a nationwide communications network. Each COMSTAR will have a capacity for more than 14,000 two-way high quality voice circuits.

## CLA Town

(Continued from page 1)

people. Other JSC people taking part in Town Meeting '76 were Joe Kerwin and Vance Brand who shared emcee duties, and Jack Lousma who helped run the concurrent Children's Town Meeting.

Three COMSTARs are planned for the system which will be capable of providing communications to the 48 contiguous states, Alaska, Hawaii and Puerto Rico.

The COMSTARs will be placed into geosynchronous orbits at 36,000 kilometers (22,300 miles) altitude.

The launch of COMSTAR spacecraft aboard Atlas/Centaur rockets requires the coordinated efforts of a large government and industry team. NASA's Lewis Research Center, Cleveland, Ohio, has management responsibility for the Atlas/Centaur development and operation. NASA's John F. Kennedy Space Center, Fla., is assigned vehicle checkout and launch responsibility once the vehicle reaches Cape Canaveral.

# Bay Area YMCA Offers Summer Basketball Clinic, Day Camping

The Bay Area YMCA in conjunction with Coach Bill Krueger from Clear Lake high school and his assistants will again offer the YMCA Basketball Clinic to boys and girls 8 years of age and older this summer, June 14-25.

The Basketball Clinic will be held at the Clear Lake high school

gymnasium, 2929 Bay Area Blvd. Participants will meet each week-day for two hours either in the morning or afternoon sessions after being grouped by age and ability. All groups will be limited and are offered on a first come, first serve basis.

The clinic fee is \$17.50 for the first child and \$12.50 for each child thereafter. Registrations are now being accepted for the clinic. Call the Bay Area YMCA at 488-6905 for details and registration form.

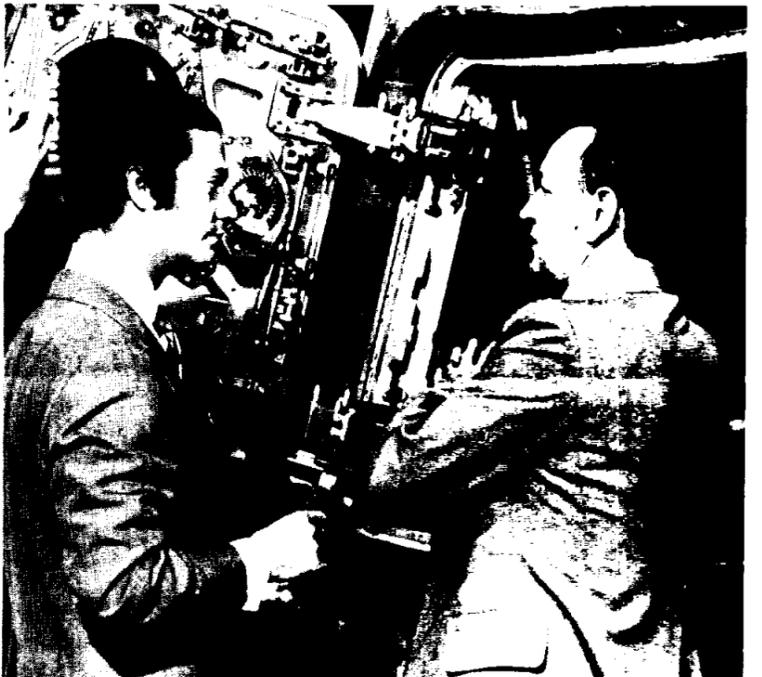
The Bay Area YMCA will also conduct four two-week day camps for boys and girls 7 through 11 during June and July at Galveston County Park in League City. Bus pickup at neighborhood schools

will be provided.

Campers will take part in such activities as archery, hiking, softball, group games, swimming, adventure trips, tag football, camp crafts, devotionals, quiet games and calisthenics.

## Phone Book Has May 28 Deadline

The next JSC Telephone Directory will be issued in July, and the deadline for changes in the classified and organizational sections is May 28. To make the July phone book, changes must be sent to JM33/Telecommunications on a JSC Form 149 before the deadline.



**SWEDISH MONARCH** — His Majesty King Carl XVI Gustaf of Sweden views the Apollo 17 command module in the Exhibit Hall with JSC Director Christopher C. Kraft, Jr. During the King's April 23 visit to the Center. At 30 he is the world's youngest reigning monarch.

**"It is hard for an empty sack to stand upright."**

*Benjamin Franklin*



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

## Freedom 7

(Continued from page 1)

Administrator Dr. James C. Fletcher, who said:

"Less than two decades ago, we were proudly pointing to a grapefruit-sized satellite in orbit. Today we are sending robot spacecraft to explore the surface of other worlds... We must keep the dreams of space alive, for in the long run they will prove of far more importance than the attainment of immediate material benefits."

# ROUNDUP



NASA LYNDON B. JOHNSON SPACE CENTER HOUSTON, TEXAS

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

Editor: Terry White

Photographer: A. "Pat" Patnesky



**ASTP AFTERMATH** — Members of Soviet working group 4 presented the JSC Electronic Systems Test Laboratory (ESTL) this poster after the Apollo-Soyuz Test Project flight last July. The US and USSR Working Group 4 ran the ASTP communications Systems Compatibility Test Program to verify joint Apollo and Soyuz spacecraft systems compatibility and the interface of both spacecraft with the Space Flight Tracking and Data Network (STDN). At left is US Test Director Bob Vermillion and US Test Conductor Jack Rivers, right.

# EAA ATTRACTIONS

## GILRUTH RECREATION CENTER

The 1976 softball season is off to a good start. Twenty-seven mens teams play on Monday through Thursday. The leagues are divided into A, B, & C levels according to ability, with one champion from each level. Six womens teams are vying for the championship in their Wednesday Night League.

The second third of the softball program is scheduled to start the week of June 14. Entries may be made from May 17 through June 4. Cost is again \$65.00 per team. With enough interest a summer basketball league will start the week of June 7th. Registration will be held May 10 through May 28. This league is unsubsidized with a fee of \$70 per team. Entry forms are available at the Recreation Center for both leagues, in Room 123.

All NASA teams are invited to play in two invitational softball tournaments being held at the Recreation Center fields. First is the Blazers Womens Tournament scheduled May 14, 15, 16. Contact Reita Smith, 946-0920. Second is the re-scheduled Space City Invitational Tournament, now set for June 11, 12, 13. Contact Mike Slack x4393.

Plans are again being made for a NASA super teams competition later this summer. Team captains from last year and captains from prospective teams for this year are invited to get your suggestions in now, to either Jack Boykin or Tim Kincaid.

**Important Notice: All Tennis Players.** The giving of lessons on the Recreation Center courts has reached a staggering proportion. It has adversely affected normal play. For this reason the following policy will be strictly adhered to from the effective date, May 10, 1976. Every members cooperation will be greatly appreciated.

(1.) All tennis classes will be operated by the Recreation Center only.

(2.) Students will sign up and pay fees only through the Recreation Center.

(3.) Any lessons involving a student paying directly to an instructor, thereby bypassing the Recreation Facility and using the courts in a private contract situation is strictly forbidden. Discovery of such a violation will result in both parties tennis court privileges being unconditionally revoked.

The next set of tennis lessons will commence shortly. Information on sign-up and cost will appear in the next *Roundup*.

## DEFENSIVE DRIVING

EAA's Defensive Driving Course is back by popular demand. We would like to think that people are becoming more safety conscious, but callers are shattering this belief, for \$\$\$s are again the great motivator.

Most Texas insurance companies give a 10 percent discount on auto coverage (except fire and theft) for three years to persons taking the course. A glance at invoices for recent auto insurance premiums reveals that the \$10 course fee saves many times that amount over three years.

Registration will be in the Recreation Center lobby May 17 and 18 from 8 to 9 am and from 10:30 am to 1 pm. Classes will be on Mon-Wed and Tues-Thurs the following week (May 24-26, and 25-27) from 6 to 10 pm.

## KICK SMOKING!

The five-day Stop-Smoking Course will begin at 7 pm May 10 in the Recreation Center assembly room and will run for five consecutive evenings.

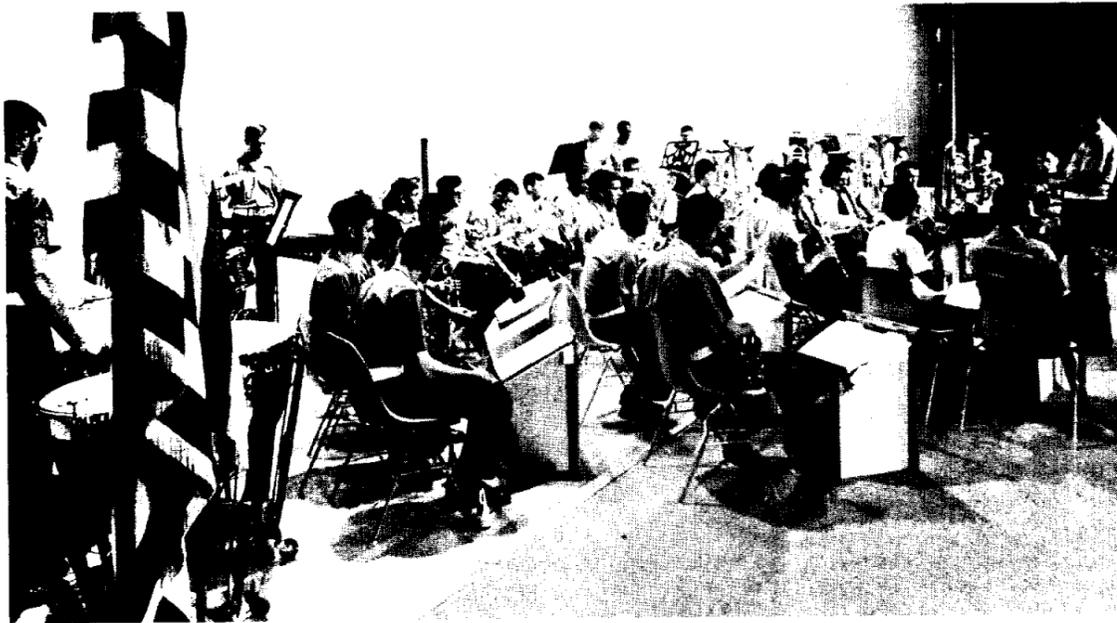
If you are not among the 103 that have already registered to take the course, show up with you \$7.50 fee Monday night and gain the impetus and assistance you need to

kick the habit.

## BICYCLE RESTRICTIONS

Effective May 10 employee dependents will not be allowed to ride bicycles onsite north of Avenue D. The restriction does not affect badged employees who ride bikes onsite.

The restriction is aimed toward protecting dependents bicycling to the Recreation Center who are not aware that they are passing through potentially hazardous areas, such as the Bldg 32 tank farm, the Hazardous Materials Storage Facility, the Propellant Fuel Waste Treatment Facility, and the Thermochemical Test Area.



**MARTIAL MUSIC** — The Stars and Stripes Forever and other pieces to make one briefly consider reenlisting were rendered in the JSC Auditorium April 22 by the Quantico Marine Band. The Band played concerts in Pasadena and aboard the Battleship USS Texas during the Houston-area visit as part of San Jacinto Day celebrations.

# Roundup Swap-Shop

Swap Shop advertising is open to JSC federal and on-site contractor employees. Goods or services must be offered as advertised, without regard to race, religion, sex or national origin. Non-commercial personal ads should be 20 words or less, and include home telephone number. Typed or scribbled ad copy must be received by AP3/Roundup by Thursday of the week prior to publication.

## BOATS

28-ft Hinner fiberglass sportfisherman, twin Ford 302s, head, shwr, ship-shore radio, refrig, slps 6, ideal family boat, sacrifice at small equity. 861-0076 days, 528-2736 nites.

72 Venture 22, wrkng sails, head, dinette, slps 5, anchor, 6-hp SeaGull, trlr, many extras, \$3500. Bullock, 488-6095.

73 16-ft Spyder ski/family boat, 45-hp Chrysler, tri-hull, back-to-back lounge seats, good trlr, \$2695. 482-7029.

74 Tahiti Front Runner, white w/blue rug, 18-ft McClain trlr, 120-hp Merc inbd/obd, 16-gal gastank, bilge pump, 3 bass seats, 7x15 ft inside, \$2600. Burkhalter, 483-5491.

## VEHICLES

63 Chevy II wagon, engine in good shape, all else a mess, runs, \$100. Doherty, 488-0182.

67 VW, one owner, low mileage, good cond. 482-0267.

73 Maverick Grabber, auto, air, pwr steer, 250 eng, radio, low mileage, \$2695. 554-7395 after 5:30.

75 El Camino, 400, positrac, ovzr radiator, air, pwr, tilt strng whl, AM/FM/8-trk, under warranty, silver w/blk vinyl roof, \$4600. 472-5243.

68 Corvette convrtbl, blue, 327, 4-spd, AM/FM stereo/cassette, pwr windows, good shape, \$3800 or best offer. 488-6602 after 5.

Itch 27-in 10-spd bicycle, xint cond, needs frnt wheel, \$50; camping Porta Potti w/chemicals, xint shape, \$50. Brenton, 488-4372.

72 Vega hatchback, air, 4-spd, low mileage, delux int, clean, \$1180. 554-6057.

73 Pontiac Catalina, white/maroon 4-dr hrdtp, xint cond, one owner family car. 781-1840 after 6.

New 8-1/2-ft Idle Time camper, HD jacks, boot, \$1300. 534-3802 after 5:30.

74 AMC Hornet, air, like new, \$2100. 534-3802 after 5:30.

74 Corvette, loaded, low mileage, below Blue Book. 474-3988 after 5.

73 Honda SL350K2 dirt/street bike, \$550. Bullock, 488-6095.

70 Opel Kadett Rally 2-dr, new steel belts, air, 4-spd, disc brakes, 30K miles, xint cond, \$850. 483-5293.

74 Suzuki GT250, less than 1000 miles, \$600 firm. 554-6168 after 6.

65 Impala 4-dr hrdtp, auto, air, pwr steer, white/red int, looks and runs well, \$495. Henderson, 482-7888.

Rent motorhome \$125/wk plus 6 cents/mile (incl ins), daily rate avail. 471-5161 after 6.

Honda 350, 5300 actual miles, \$725. Taylor, 477-3964.

65 Chevy Impala 4-dr hrdtp, auto, air, pwr steer, 3 good radials, fresh tuneup, looks good, runs well, \$495. 482-7888.

69 Pontiac Bonneville 9-pas sta wgn, plush int, xint cond, new tires, air, much more, motor runs but needs work, best offer over \$475. Jones, 471-3303.

## WANTED

Used go-cart. Gurley, 534-3800.

VW pop-top camper, air; consider other van or pickup campers. Nussman, 482-7009.

A few good pilots for 75 Skyhawk II flying club, IFR, stereo, based at Clover Field, club rate \$12/hr. Laurentz, 488-2537.

Expanded carpool from Parkview Estate, Pasadena. Davidson, 946-2523.

15-17 ft single-axle travel trailer — Nomad, Skamper, whatever. White, 554-2916.

## PROPERTY & RENTALS

Lot on Lago Vista Resort, Lake Travis near Austin, must sell. 477-3964.

Luxury 2-bdr apt in By-the-Sea Condominium at Galveston West Beach, air, carpeted, color TV, kitchen, fully equip, wkly rental. Clements, 474-2622.

100x150 wooded lot at Nugent's Cove, nice view Lake Livingston, all utilities, hrdtp roads, \$3000. Williamson, 554-2693.

4-2-2 exec home in Middlebrook, contemporary, atriums, skylites, fenced, less than 6 mos old, \$485/mo. 474-2081.

1-1/2 acres near Pearland, Western Heights Sec. 1. 332-2687.

4-2-1/2-2 2-stry brick on 90x200 wooded lot in Oak Hollow subdiv,

# NASA Issues Catalog Of Free-Loan Films

NASA has announced the release of a new 28-page catalogue of free-loan motion pictures. Eighty-nine general interest and educational films are listed with synopsis and instructions for ordering them through the eight NASA regional film libraries.

NASA motion pictures have been honored with more than two hundred major awards for creative excellence by U.S. and foreign film festivals. All films are cleared for television release.

**Equal Opportunity  
is good business!**

For a free copy of 1976 NASA FILM LIST write:

Office of Public Affairs  
Code FGM  
NASA Headquarters  
Washington, D.C. 20546

# Forest Bend Firefighters Plan Parade

New and antique fire trucks will parade through Friendswood's Forest Bend May 22 as part of a "200 Years of Firefighting" celebration which includes a barbecue lunch and a carnival.



Fire trucks from Harris County communities and surrounding Texas fire departments will take part in the 11 am parade commemorating the organization by Benjamin Franklin 200 years ago of the first volunteer fire department in the United States.

Barbecue will be served from 11 am to 1:30 pm, and the carnival — with rides and games for all ages — will run from 11 am to 8 pm. Barbecue tickets are \$2.75 advance, or \$3.25 at the door. Karen Baker at 482-2021 and Diane Blandy at 482-2180 have additional information.

JSC and industry employees who are members of the Forest Bend Volunteer Fire Department and working on the parade and carnival are Pleddie Baker, JSC Flight Activities Branch; Tom Aubry, Technicolor Graphic Services; John Chioma, Rockwell Scheduling and Integration Office; Bill McLaren, Lockheed Science and Applications Branch; and Ron Woods, ILC Industries Spacesuit Support.

## Licenses Switched

JSC employees who parked their cars at Metro-Clear Lake City airport March 29 to April 3 are asked to check their auto license plates to see if they are the right ones. Apparently some person with a screwdriver and a warped sense of humor scrambled at least three set of license plates. Anyone having LNZ 974 is asked to call 474-2203 or ext 2938.

## SATO Tickets For Vacations

The Scheduled Airlines Traffic Office (SATO) in Bldg 1 handles not only official ticketing and reservations for JSC but will handle personal vacation travel as well.

Located in Rm 130, Bldg 1, SATO can be reached at ext 3305.



**WATER WATCH** — Water analysis plumbing in the JSC Urban Systems Project Office water monitor system mobile laboratory is explained to Boeing secretary Susan McManus by Boeing computer engineer Gerald Poel. Designed for experimentation with municipal utilities, including advanced water and waste effluent treatment, the water monitor system (see April 23 Roundup) is in a mobile trailer parked near building 32J, and houses a data acquisition system, sensors, a sample conditioning/distribution system, and the report generation system. The laboratory will be moved in July to the Gulf Coast Waste Disposal Authority's Ponderosa Waste Water Treatment Facility in northwest Harris County for field tests. USPO's Reuben Taylor is the JSC project engineer, and Jeff Jeffers is his Boeing counterpart.

## Lageos Reflects Laser Pulses To Measure Earth Crust Motion

A satellite which looks like a giant golf ball Tuesday was launched into a 5,900-kilometer (3,600-mile) high orbit to serve as a tool for obtaining information on Earth's crustal movements, polar motion, solid Earth tides and precise locations of various spots on Earth.

The Laser Geodynamic Satellite (Lageos) was launched aboard a Delta rocket from the Western Test Range in California May 4 at 3 a.m. CDT.

Lageos will use and demonstrate the capability of laser satellite tracking techniques to make extremely accurate measurements of Earth's rotation and movement of the Earth's crust.

The useful life of Lageos is estimated at up to 50 years but it will remain in orbit for more than 8 million years.

One important benefit of the pin point accuracy of such measurements could be in a better understanding of the mechanisms which cause earthquakes. NASA expects the U.S. Geological Survey, which is responsible for earthquake research and prediction, to use Lageos to make minute measurements of movements of large masses called tectonic plates, as well as specific measurements along critical faults, such as the San Andreas fault in California.

Lageos is a solid, heavy, passive satellite with no moving parts or electronic components. Its extremely stable circular orbit will allow it to serve as a geodetic reference for ground observations to be made in support of NASA's Earth dynamics programs.

Lageos is an aluminum sphere with a brass core about 60 centimeters (24 inches) in diameter and weighs 411 kilograms (903 pounds).

It carries an array of 426 prisms called cube-corner retroreflectors, giving it the "dimpled" appearance of a golf ball.

Retroreflectors are three-dimensional prisms that reflect light — and, in this case, a laser beam — back to its source, regardless of the angle at which it is received. The Lageos retroreflectors are made of high-quality fused silica, a synthetic quartz.

A laser pulse beamed from a ground tracking-receiving station to Lageos initiates a timing signal at the ground station that continues until the pulse is bounced back from the satellite and received at the station. By measuring this length of time, the distance between the station and the satellite can be calculated. This process is known as laser ranging.

Movements of the Earth's surface as small as 2 cm (8 in.) can be determined using this technique. By

tracking Lageos for a period of several years, characteristics of these motions can be determined, and perhaps correlated with observed Earth dynamics phenomena.

Lageos was launched into a circular orbit of 5,900 km (3,600 mi.) altitude with an inclination of 110 degrees to the equator. This is high enough to allow simultaneous observations between stations on different continents.

Get  
your  
blood pressure  
✓ ed



**'TIS SPRING AGAIN**, when the sap rises in trees and girl-watchers. Two unidentified JSC employees do an eyeballs-left maneuver as a comely tourist flakes out on the grass between Bldgs 2 and 12 for a reading break while the rest of her group takes the JSC do-it-yourself tour.

### OZONE PATROL---

## Ames U-2 Aircraft Sniffs Air Pollution

A NASA earth survey aircraft is studying the stratosphere over Central America, parts of South America, Canada, and the Caribbean and Pacific Oceans as part of a long-term global effort to measure ozone, nitric oxide, and man-made pollutants in the air.

The aircraft, one of two U-2 high-altitude research planes flown by NASA, is operating out of Howard Air Force Base in the Canal Zone and from Loring Air Force Base in Maine on missions that may help scientists understand how these gases and particulates will affect the global climate over a long period of time.

Similar flights have been made from the U-2's home base at Ames Research Center in Mountain View, Calif.; Wallops Flight Center in Virginia; Fairbanks, Alaska; and Honolulu, Hawaii. Data from the stratospheric regions around the Canal Zone and eastern Canada will add still another dimension to the emerging picture of the dynamics and chemistry of the Earth's stratosphere and protective ozone layer.

The data flights employ four scientific instruments. Ozone and nitrogen oxide measurements are being made by a stratospheric air sampler for Dr. Max Loewenstein of Ames; an aerosol particle sampler will measure minute aerosols for Guy Ferry of Ames; measurements of halo-carbon (freons) and methane levels will be made by the stratospheric cryogenic sampler for John Arvesen of Ames and a foil sampler will obtain data on aerosols and trace gases for Dr. Alan Lazrus of the National Center for Atmospheric Research, Boulder, Colo.

While based in the Canal Zone, the aircraft flew over parts of Panama, Ecuador, Costa Rica and Peru. Operations based at Howard AFB ran from April 8 through April 17. The aircraft and the 15-member NASA team then left Howard for Loring Air Force Base, Maine,

where similar missions will be flown over the Northeastern U.S., Canada and the Atlantic Ocean. Data from these flights will be available to the host governments.

The aircraft will be carrying no photographic or other downward-looking equipment during the flights.

## Toastmasters Aid Knee-Knockers

Several members of the newly-formed Spaceland Toastmasters Club are attending the Toastmasters International District 56 Spring Conference today and Saturday in Corpus Christi.

Spaceland Toastmasters meet from 11:15 am to 12:45 pm on the second and fourth Wednesdays each month at the Bonanza Sirloin Pit on NASA 1, and the Club has a few openings for members. Limited membership gives members more opportunity to take part in Club activities and teaches inexperienced members to speak before groups without having to speak above the noise made by knocking knees. Each member sets his own pace and goals.

Persons interested in joining should contact one of the following Club officers: President Sharon Henderson, Administrative VP Phonicille Devore, Educational VP Marilyn Bocking, Secretary Elaine Stemerick, Treasurer Mary Kerr, or Sergeant-at-Arms Patricia McKay.

Equal Opportunity is  
for everybody!

## JSC Air

(Continued from page 1)

The Houston area has been designated by the EPA as an Air Quality Maintenance Area for particulate matter and photochemical oxidants. This means the area has potential for exceeding the national standards in the next 10-year period.

The EPA national primary standards are 75 micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ) as an annual geometric mean and 260  $\mu\text{g}/\text{m}^3$  as a maximum for a 24-hour period for particulate matter and 0.08 parts per million (ppm) for a 1-hour period for photochemical oxidants.

Sampling for particulate matter was conducted throughout calendar year 1975 and during the first calendar quarter of 1976. Sampling for photochemical oxidants was initiated in February 1976.

Analyses indicated the average concentration of particulate matter in 24-hour air samples collected during 1975 was 33  $\mu\text{g}/\text{m}^3$  as an annual geometric mean. The highest concentration detected for the year was 138  $\mu\text{g}/\text{m}^3$ . During the first calendar quarter of 1976, the geometric mean was 39  $\mu\text{g}/\text{m}^3$ , with 90  $\mu\text{g}/\text{m}^3$  the highest concentration detected.

The average 1-hour concentration of photochemical oxidants during the first quarter of 1976 was 0.01 ppm.