



## Skylab Crew In "Great Shape"

The Skylab 4 crew has adjusted well to Earth's gravity after spending a record 84 days, 1 hour and 16 minutes in space.

"We feel well, we're running again and aside from very, very minor things, we're in great shape. We're delighted with the way the medical tests have come out," Pogue stated at a press conference held recently at JSC.

The good medical reports probably resulted because the crew worked hard during the flight to maintain physical condition, Pogue related.

Carr felt that the crew worked well as a team because they complimented each other's ability.

"Bill is a creative, philosophical kind of guy, Ed is the kind of guy who likes to look ahead and know what's coming and plan ahead, and I'm kind of an executive man," he said.

The crew pointed out several highlights of the mission during the debriefing. Gibson said that the observation of a very bright coronal transient exemplified coordination between the ground

team and the people in flight.

"One of the observatories on the ground picked up a prominence which was lifting off the limb and reported it to Mission Control who sent it up to us," he explained. "Within a matter of minutes, we were able to get the ATM instruments on it."

The crew also was pleased that they were able to record the activities of a solar flare from its beginning.

Carr related that the most "thrilling" aspect of the mission

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CLEAN shaven and dressed comfortably, the Skylab IV crew, Cdr. Gerry Carr, Spt. Ed Gibson and Ptl. Bill Pogue are shown here relaxing during their debriefing exercises in Bldg. 4.

## Dr. Fletcher Discusses NASA's FY-75 Budget

Dr. James C. Fletcher, NASA Administrator, recently announced that the Fiscal Year 1975 Budget estimates for NASA are based on a budget plan calling for new authorizations and appropriations of \$3,247.1 million and total net NASA outlays in FY 1975 of \$3,272.5 million.

Dr. Fletcher explained that the budget increase of about \$100 million is less than would have been required to maintain NASA's entire program as previously planned, primarily because of inflation and other necessary adjustments. Some programs, therefore had to undergo changes.

The first manned orbital flight of Shuttle, for example, is now expected to occur in the second quarter of 1979 instead of at the end of 1978.

Basically, however, the FY 1975 budget carries forward NASA's programs as planned last year.

Three important new projects in Space Science and Applications are planned in the budget—Pioneer Venus, SEASAT, and a Heat Capacity Mapping Mission (HCMM).

Pioneer Venus is a project which has had top priority as the next step in planetary exploration. Detailed study of the composition and the global dynamics of Venus's atmosphere will give us a better understanding of that planet and the forces which drive Earth's atmosphere, meteorology and climatology, says Dr. Fletcher.

Two Atlas-Centaur launched missions will fly to Venus in 1975.

SEASAT will be an experimental applications satellite to observe and measure physical characteristics of the oceans, both to develop a scientific understanding of ocean dynamics and to determine the feasibility of developing an ocean dynamics forecasting system which could be of great economic value to the shipping and fishing industries. SEASAT-A will be launched in 1978.

Heat Capacity Mapping Mission (HCMM) will be another experimental applications project. It will use a small "Explorer-type" satellite to make thermal measurements of the Earth's surface.

These measurements will be used to identify favorable locations for further ground investigations which will determine our ability to discriminate rock types and rock structures.

This discrimination can be of major value in locating mineral resources and in the construction of major civil works such as highways and canals.

The measurements will also be used to investigate the feasibility of locating geothermal sources by remote mapping from a spacecraft.

Among other principal on-going programs which will continue in FY 1975 is the Apollo Soyuz Test Project (ASTP).

"I think this makes it clear that even within the constrained budgets NASA has had in recent years and has again in FY 1975, the nation has a hard-hitting, useful and exciting program in space and aeronautics", Fletcher remarked.

## Energy Conservation Program Has Significant Results

A three-part program to substantially reduce energy consumption at the Johnson Space Center has already begun to pay significant dividends.

The first part of the program seeks to save power through changes in work hours or procedures, and through minor modifications to facilities and equipment.

Meanwhile, engineers are investigating more extensive changes that might be made to conserve energy. Because improvements to the center would be required to realize an additional saving, a careful study of such modifications must be made before approval can be given and the funds requested.

The third step, which promises long-range benefits to people everywhere, is research and development to reduce power consumption and to increase the supply of energy available to the world.

Most of the early savings have been produced by changes in the working conditions at JSC; including sharp reductions in non-essential lighting, adjustments in heating and cooling requirements, and limitations on official transportation.

Despite the activity associated with the longest manned spaceflight in history, an 84-day Skylab mission concluded February 8, energy uses at the space center have been cut remarkably.

In December, JSC's total energy use was 23.9 per cent lower than was anticipated based on previous year's figures.

These results, which reflect a continued trend toward lower energy consumption, were brought about by cutting lighting by as much as three-fourths in some areas, by permitting a wider range of temperatures inside buildings, by improving control of the heating and cooling system, by withholding one-fourth of the approved travel budget, and by cutting aircraft use by one-fifth.

Such changes, along with the restriction of most lighting and temperature control to working hours, has reduced energy use steadily since September.

Despite rising prices for most fuels, the bill for energy consumed from July through December 1973, was reduced by more than \$100,000.

Although substantial energy savings have already been realized, center officials continue to seek areas where further reductions may be made without interfering with other center efforts.

At present, some further reductions in lighting are being considered.

In addition to the reduced use of natural gas, electricity, and liquid fuels by the center itself, a conservation program by employees has also been successful.

A car pooling program, with preferential parking for those who share rides, has also been successful. As more and more drivers become riders, NASA employees are contributing directly to easing the national shortage of gasoline.

About 800 fewer cars are now driven to work at JSC, and the number of riders per car continues to increase.

A test project to evaluate the potential for commuter buses to carry employees to the center from residential developments in the area is also under consideration.

*(Continued on Page 4)*

## "Houston, We've Got a Problem" To Be Aired Sat.

"Houston, We've Got a Problem," a 90-minute TV movie filmed at JSC during January by Universal, will be aired Saturday on Channel 13 at 7:30 p.m. CDT as the ABC Mystery Movie. The film centers around the Apollo 13 inflight emergency, with a fictional treatment of effects of the mission upon the lives of flight controllers.

Starring in the film are Robert Culp, Ed Nelson, Gary Collins, Sandra Dee, Clu Galager, Steve Franken and some 200 JSC employee "extras."



SUGGESTION winners for January are, standing, left to right, Charles L. Bailey, EG; William S. Lee, JH; Fred H. Juneke, JH; Alfred J. Lancki, JH; Edwin L. Shropshire, JH; James R. Jaax, EC; and Jack A. Kinzler who presented the awards. Sitting, left to right, are: Andrew J. Farkas, EG; Goree Jenkins, JM; Lillian M. Hudson, EP; Lubert J. Leger, ES; Hoyt McBryar, EP. Not present but also receiving awards were H. Mervin Hughes, BJ; Dr. George W. Hoffler, DB; William G. Jones, EM; and Larry P. Ratliff, EW. Awards ranged from \$25 to \$500 and were for a variety of suggestions ranging from the use of a new spray adhesive to the installation of mail-cart ramp near Bldg. 13 and included such spacerelated ideas as the invention of a fail-safe capture latch for the Apollo Soyuz Test Project.

## JSC Personnel Get Service Awards

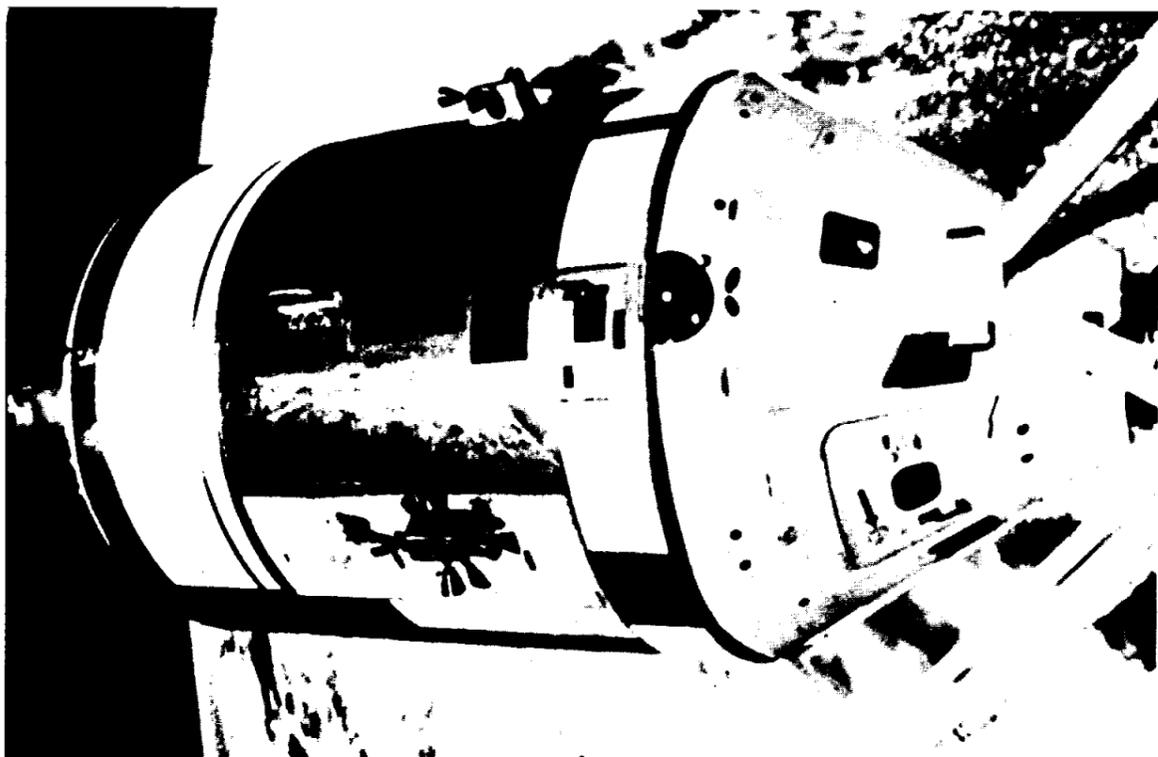
A number of JSC employees were honored recently with Length of Service Awards.

Receiving awards for 25 years of federal service were Thurlow C. Lorenz, Harold E. Ream, Charles P. I. Bergtholdt, John E. Williams, Gene A. Reed, Warren Gillespie, Jr., David B. Homer, James H. Lee, Harold J. Davis, Richard M. Gilley, Hestle A. Johnston, Edgar P. Michael, Sidney S. Kendall, Andrew W. Patteson, Claudia W. Simmons, William J. Nesbitt.

Thirty-year Length Of Service Awards were presented to Charles Gordon, James F. Demuth, Emily W. Stephens, Essie E. Morris, Gail L. Blalock, John N. Ross and Russell E. Clickner.

Caldwell C. Johnson, Jr. received a 35-year service award.

Dr. Kraft presented the awards on February 20.



THIS EXCELLENT view of the Skylab 4 Command/Service Module in a docked configuration is a frame from a roll of movie film exposed by a 16mm Maurer camera. The other four major components of the Skylab space station in Earth orbit are out of view to the right.

## JSC Extends Several Contracts

JSC recently extended several contracts for Center support.

Northrop Services, Inc. of Anaheim, California has received a one-year extension to a contract for operations and maintenance of laboratories and test facilities at JSC. The contract has a negotiated value of \$9,587,601.

Northrop support at JSC will include maintenance and operations of training, life sciences and engineering laboratories and the Lunar Curatorial Laboratory for returned Apollo lunar samples.

The contract, in its second year, calls for four one-year extension options.

Also, the Singer Company Simulation Products Division of Binghamton, New York has been awarded a follow-on contract from JSC for maintenance and modification of the Center's

Simulation complex (SIMCOM). SIMCOM is used for training flight crews and ground technicians for future manned space-flight missions.

Singer's cost-plus-award-fee contract was awarded on a non-competitive basis and has a total value of \$2,268,500.

Contractor for SIMCOM work since September, 1964, Singer will perform tasks under the new contract in JSC training facilities and in their own off-site facilities. The new contract runs through June 30, 1974.

Philco-Ford Corporation's Western Development Laboratories, Palo Alto, California have received a \$4,095,500 modification to their operational support contract at JSC. The contract supplemental agreement calls for WDL to develop an Earth Resources Production Proces-

sing System at the Center.

Standardized processing of time histories, film images, tabulations, plots and sensor data on computer-compatible tapes will be provided by the system to Earth resources principal investigators.

The Cost-plus-award-fee supplemental agreement to the Philco-Ford contract will bring the total contract value to \$54,534,500. The company, for several years has had a contract for systems engineering maintenance, operation and operational support of the Mission Control Center at JSC.

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SCIENTIST ASTRONAUT Edward G. Gibson has just egressed the Skylab EVA hatchway. Astronaut Carr, SL-4 commander took this picture during the final Skylab EVA which took place on February 3. Astronaut Pogue remained inside the space station during the EVA by Carr and Gibson.

## "Ounce of Prevention Worth Pound of Cure"

(The following article by Dr. Paul E. Wright, JSC M.D. is the first article in a series of articles on Health Care.)

Good health is desired by every family, but frequently, little attention is paid to methods of achieving and maintaining this objective. Many people will not seek medical care until a major sickness occurs. This is when the old adage, "An ounce of prevention is worth a ton of cure," really comes true.

Preventive medicine starts at birth. When a child is born, a call to a competent pediatrician should be one of the first steps you take. In most cases, even before the baby leaves the hospital, the pediatrician will check the baby and then set up a regular schedule of office visits.

Once the "critical" period is passed, the child should follow an annual schedule of physical checkups while continuing to receive all the required inoculations to prevent many known diseases that attack the young.

What happens when the baby becomes an adult? All too often, the annual visit to the doctor is forgotten or termed unnecessary because we all tell ourselves, "I'm not sick—why go to the doctor?"

True, periodic examinations do not guarantee good health, but often illnesses such as high blood pressure, diabetes, and cancer are detected at stages when vigorous early treatment can be successful.

Cancer of the cervix, for example, has a 100 per cent cure rate when found early; at a late stage, there is a five year survival rate of less than 10 per cent. This is but one example of the value of periodic physicals.

In addition to the all important periodic visits to our physician, is there anything else we can do to preserve our good health? The following are items that should be considered by every member of the family:

**EXERCISE:** Today a round of golf or a walk from the parking lot into the stores of a shopping center is considered strenuous exercise. To be effective, exercise must raise the pulse rate. Studies in medical journals show that proper exercise may slow down hardening of the arteries, lead to a more efficient oxygenation of the lungs, and give a general feeling of well-being.

Some examples of therapeutic exercise are jogging, running in place, swimming, cycling, bas-

ketball, and squash. Be sure you receive adequate exercise for a healthier life, but check with your physician to obtain his permission for such an exercise program.

**CIGARETTE SMOKING:** Statistics prove that heavy cigarette smoking is associated with an increased incidence of lung cancer, hardening of the arteries, and emphysema—three of the most common causes of death in the adult population.

**HEAVY ALCOHOL INTAKE:** The alcoholic is a poor family man and usually is an unreliable worker. In addition, the alcoholic is prone to disease such as cirrhosis of the liver, esophageal varices (dilated veins that can bleed in the esophagus), and duodenal ulcers.

If a person drinks three martinis a day, he already is consuming 450 calories. No wonder he cannot stick to a 1200 calorie reducing diet. Other side effects of excessive alcohol intake are poor judgement at work and behind the wheel. The latter often results in a fatal accident.

**OBESITY:** Insurance companies have very impressive statistics showing that obese men and women live shorter life spans than normal adults. The obese adult has a better chance of suffering a heart attack, stroke, or diabetes mellitus (sugar diabetes).

**DENTAL CARE:** Here too, we often delay a visit to the dentist until an emergency arises. Periodic visits to the dentist by every member of the family are essential to spot potential trouble.

It is important that every member of your family receive proper medical attention to insure continued good health. If you do not have a regular schedule of visits to your doctor or dentist, plan today to make those appointments.

### ATTENTION

The JSC Golf Association kicked off its 12-tournament schedule on February 16 at Sun Meadow Country Club. The winning threesome were Dick Toussignant, Chuch Laird, and Lou Novy.

Sam Glorioso captured low net honors on the first "Sudden death" playoff hole.

The next tournament will be held at the Tejas Golf Club on March 16.

## ROUNDUP

NASA LYNDON B. JOHNSON SPACE CENTER

HOUSTON, TEXAS



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# Roundup Swap-Shop

Swap Shop advertising is available to JSC 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.

### MISCELLANEOUS

Remington tape type adding machines (2) Need cleaning, add, subtract, mult., divide. \$20.00 ea \$35.00 both. 488-1966.  
Wilson, J. Boros golf clubs. 1-3-4-5-woods, 2 thru PW irons. 488-1307 or 483-5067. Best offer. T.A. Breezy.  
Singer sewing machine, straight stitch, in wood cabinet, \$35.00.  
Hankscraft Cool-Vapor Master vaporizer-humidifier, like new. \$5.00. 474-2137.  
Magicubes. G.E. 3 per pkg. 6 packs for \$5.00. Handley, 482-7041.  
Will trade fast, wet 14' Kona catamaran in exc. cond. for slow dry Lido 14, Windmill, G.C. 15 etc in similar cond. 488-3966.  
Left-hand action savage 110L 7mm Magnum. Four-power Leopold scope. \$150.00. 479-1330. Hoyle.

Richest field telescope. 8" mirror (F/4.5). Equatorial mount, 50mm. finder scope, 32mm. Erfle eyepiece, adapter for 1 1/4 eyepiece. \$200.00. Boyd, x-4671, 941-7697 or 747-3977.  
Arkansas timber-land mostly in pine, some hard-wood 40 acres at \$250 an acre. 474-2906.  
Black and Decker, twin rotor electric hower, like new, \$50.00. Jones, x-2823 or 538-1655.  
1972 Yamaha 175 c.c. Enduro \$450.00 x-3786 or 481-0608. Paul.

Pool table-4 x 8, ball return, Sears Briarwood model, all acces., like new. \$250.00—Burt, 333-2117.

U.S. Army Carbine, .30 cal., with extra clips, ammo, etc. NRA good. \$125.00. Kilpatrick x-2408.

Simmons yellow baby bed & mattress, \$30.00 Yellow wicker changing table \$9.00. Swing set \$20.00. 488-2775.

Ham Gear: Heath SB610 Monitor scope \$80.00. Heath SB600 speaker \$15.00. Heath HP 23A A.C. power, \$45.00. Lindsey, 488-0517

Trolling motor, Shakespear 606, extra long shaft-ideal for runabouts, exc. cond., \$45.00. Frost, x-4031 or 474-2129.

Baby bed, play pen, stroller, car seat. exc. cond.. Arnold 481-2890 or 483-6321.

Custom garden tilling, Clear Lake Area, Reasonable rates. 488-2652.  
Would like to trade 9 1/2 bks of S & H green stamps for Big Bonus stamps, 944-2901 or x-5234.

6.50 x 8, 6 ply Armstrong aircraft tires & tubes. One brand new, one slightly used. \$30.00 for pair. 488-3265.

Ham radio station, Collins KWM-2, 50' antenna tower, tri-band beam, rotor, etc. 944-6513 W5/RGA.

Sears Best portable 19" B&W TV, 9 mos. old. Sunscreen and cart; must sell. 481-1775.

Attention singles: Bay Area Singles Club Party 8 p.m., Friday, March 1, at Balboa Apartments party Room (BYOB). For information call Jerry, x-3561.

Antique trunk, beautiful finish, bowed top, 100 yrs. old. Poindexter 4434.

Camel 10 x 14 cabin tent, very good cond. \$80. Fishmaster 0-50 foot water temperature meter. \$18. Don Price x 2962 or 471-3314.

Houston Youth Symphony at Herman Park needs musicians all ages. We need carpool Thursday night. G.G.C. Guild 488-1700.

Lido 14 sailboats, info on prices and cond. of used Lidos for sale by owners.. FC-6 Hoover, 334-2392.

Day Sailer, trailer, 2 sets of working sails, spinnaker, completely rigged for racing or cruising \$1600. Davidson 946-2523.

Stamps, buy, sell or trade plate blocks and mint sheets. Call 488-0317.

Dry storage stalls 12x30x10, roll up doors, cement floors, all metallic building. 332-3588.

### HOUSEHOLD ARTICLES

Early American sofa, easy chair, maple twin bed, two mattresses, two box springs; blond coffee table. \$200 or negotiate separately. 483-2141 or 471-3025 after 5 p.m. Riggan.

Oval dinette table with leaf and 6 chairs 1 1/2 yrs. old, paid \$180, make offer. 488-6874 after 5 p.m.

Frostless 15 cu. ft. Signature Refrig-freezer, 2 dr. over-under. Runs perfect, copper-tone finish, fair cond. \$75.00. 474-2041. Ross.

15' x 20' gold sculptured carpet, very good cond. \$125.00. 488-1243 after 4:30.

Living room sofa; Early American, green, 100 inch exc. cond. \$65.00. 946-7277.

Hi-Fi-Dynaco 70 W. amp., PAS 2 preamp. & Sherwood FM Tuner. \$125.00. Burt, 333-2117.

23" Magnavox color TV. Table model with roll-around stand. 6 yrs. old, still in working cond. \$75.00. Call Stagg, X-2497 or 481-3086.

6 months old upright freezer, 20 cu. ft., copper-tone frost-free. 3-yr. service policy included—\$200.00. 332-3846 after 6 p.m.

1965 Kenmore washing machine, 3 cycle, 2 water levels, 5 temperature settings. \$20. Lisenbee, 487-0260 after 5 p.m.

72" Krohler sofa, exc. cond. 474-4885.

Stereo 75 W amplifier. 2 10" acoustical sound hard-wood walnut cabinets. 8-track reel/reel tapedeck all transistor w/automatic reverse and 2 mikes. Retail value \$550. Sell for \$295. Will finance. 479-7815 or X-3121.

Contemporary triple dresser w/mirror. Exc. cond. \$50.00 333-4184 or X-4588.

### VEHICLES

Boys Sting Ray 20" bicycle 1 \$15, Cal '73 Chevy Impalla, 2 door, hdt, power steering/brks, take payments. 488-0303 after 5.

'68 Vette gray-blue flake metal paint, power, A/C FM/AM, 350 cid engine, \$2600,

### Forbes X-2526.

Dunebuggy, Corvair, Calif. Custom, 30 mpg. Bullock 488-6095.

'67 Plymouth Sport Fury, maroon, auto, A/C, radio, engine in gd cond. 13 mpg. \$500. 488-6249 or x-6206.

'71 Vette, white t-top, 4 spd, AM/FM, tilt whl, leather, A/C. new s/b radials, low mileage \$4800. 488-6249 or x-6206.

'68 Chrysler Town & Country 9-passenger wagon, pb, ps, radio, air, one-owner. 62,000 miles exc. cond. \$1200. 473-6840.

'64 Renault Caravelle, removable hdt, r/h, runs well, 3 new tires, \$295. 482-7239.

'67 Ford Galaxie 500, 4 dr. lt. blue, recent valve job, inside & out exc. cond.. 17 mpg. \$750. Charles 481-2940.

'67 Mercedes 250S leather, A/C, sun roof, trailer hitch, manual, radial tires Percy 482-7837.

'68 Mercedes 230, A/C, radio, radial tires, new auto xmission. Percy 482-7837.

For Rent: Jayco hdt, fold-down camper, kitchen, ice box, sleeps 8. Low profile, pulls easily. \$10/dy, \$57/wk (\$25 min.) Kilbourn 482-7879.

2 26" girls bikes. \$7.50 each. McPhillips, 337-1471 or 337-1484.

'72 Cadillac Coupe de Ville, white/white vinyl top, red leather interior, fully equipped, including AM/FM stereo and tape. Like new, \$4,700. Blackenship 488-5242.

'70 Olds Cutlass S. 2 dr sedan, 4 spd, air, 16,000 miles, eng, oh. 482-1625 after 5.

'67 Honda CL160, w/windshield, 11,000 miles by adult rider, very gd cond., no dents, \$250. 488-3265.

'74 Nova beige, 4 dr, sedan, air, small equity and assume payments. Joe x-5545 or 944-6513.

'71 Toyota Celica, 2 sp, air, radio, loaded, excellent condition, \$2,300. Green x-5111 or 333-3001.

Olds 88 Custom, 70, 47k miles, 4 dr. sedan, new tires, cruise control, clean, gotta go. F. Newman 488-4370 or x-7272.

1970 Mobile Home, 2 bdr., 1 bath, 12 x 65, unfurnished, \$4,200. Call Becky 339-2267.

'68 Dodge Dart Parts: slant 6 engine \$100; auto transmission \$75; complete factory air \$75; left front door \$10; radio \$15; front fenders and grill \$25. 488-1966.

'69 Chrysler Newport-4 dr., automatic, fact air, radio, power steering, 16 MPG-\$725. 488-4453.

Two girls 26" bicycles—one English racer, one Sears three speed—\$20 each, 941-2325.

1972 Montessa, 125 cc Motocross cycle, runs great. trophy winner \$300. 482-2589 after 5 p.m.

'70 Ford LTD Station Wagon—completely equipped—very good condition, 59,000 mi. Granger, 4 82-6638 or x-3751.

1961 Triumph TR3, needs body work, mechanically good, \$300. Cal 333-37\*2.

Honda 50 minitrail. Excellent running condition. \$90. Call Polly at 2021. Home 488-0192.

1973 Vette Cp., air, AM/FM stereo, auto trans. 350 cid. 20,000 mi., \$5800., Call 747-3090 after 6.

Boy's 20" "Spyder" bicycle, good condition, \$12.00, Call Smith 488-3238.

### PETS

Free: 7 puppies ready for delivery. Cute mixture of basenji and leopard dog. See to appreciate. Mickey Donahoo, 483-4401.

Silver Toy Poodle puppy, 7 wks old, AKC registered, \$60.00. 471-4539.

For Sale: Three (3) male Lhasa Apso puppies. Seven wks. \$80.00 each. Cox, 333-3950.

Free German Shepherd, loves kids, all shots, obedience school. Too big for new yard. 481-4196.

Miniature Poodles: White females, 2 months old; black males, 6 wks old. AKC—pet and show qualities, \$75.00 up. Godeke, 644-7870.

Female German shepherd, no papers, 8 wks, free to good home. 488-6052.

Irish Setter pups, whelped Feb. 7., Natl. Ch. Lines. AKC/FDSB, \$100. 334-5923/333-2910 18207 Bahamas, Nassau Bay after 5.

### WANT ADS

Chain saw, gasoline, good cond., reasonable price, Mr. Zrubek, x-3669, 333-2549, after 5:30.

Need ride from Pasadena to NASA. 607 Maple off of Water/Hairrs. x-6106 or 477-8339 after 6 p.m.

Back pack w/frame & hip belt. Prefer international orange color. Hooper, 488-4120.

Dolphin Sr., Sunfish or similar type sailboat & trailer, 334-2180.

Pre-1965 dimes, quarters and halves. Currently paying \$2.25 per \$1.00 face value. Lafferty, x-2666 or 485-1997 after 7 p.m.

Wanted: Cheap fluorescent light fixtures. 483-4196.

Wanted: Window air conditioners, working or not, pay up to \$15.00. M. Avilia, 5807, after 5. 481-2490.

### PROPERTY AND RENTALS

Lake Livingston resort/retirement home 3-2-1, attractively furnished, Cape Royale area. Weekly, monthly, and yearly rates. 488-4487.

For Rent: lovely 2 yr. old brick 3-2-2 home, large den with fireplace, carpeted, built-ins, central air, 3/4 ac. lot, in Alvin, call 331-5026.

Sale: Clear Lake Forest, by owner, 4-2 1/2-2, contemporary, cul-de-sac, trees, large den & fireplace, 2200 square feet. \$10,000 equity plus \$35,000 at 7 3/4%. 4118 Willow Hill. 334-1878 or 483-6355. Mr. Corcoran.

For Sale: Townhouse-2-2 1/2-2. 2 story unique floor plan, custom drapes, fenced Courtyard, pool. Sagemont. \$30,500. 481-4664.

Point Lookout—wooded waterfront lot on Lake Livingston, 75 x 137, utilities & restrictions, \$3295. 946-7587.

### LOST & FOUND

Lost: Parts manual for 300Si Mercedes (with name G. Schumacher on cover). Reward., please call 2789, Estella.

Lost: Black overcoat with gloves; found-black overcoat with gloves! Someone switched coats, Bldg. 16 Jan. 24 meeting with Russians, Young x-4801, 334-3272.

Lost: Light yellow topaz setting from ring. Lost between Bldg. 1 & 2 & parking lot on February 14 (Valentines Day). If found contact Jennie "Cha Cha" Carlin, x-2938 Reward offered.

# Pioneer Spacecraft Continues on Journey

NASA's two Jupiter Pioneer spacecraft are continuing to push outward the limits of explored space.

Pioneer 10 now is 60 million kilometers (37 million miles) beyond Jupiter, and Pioneer 11 is completing its trip through the Asteroid Belt.

Pioneer 10 flew by Jupiter last December 3, and returned pictures and much information on the giant planet. It now is 913 million kilometers (567 million miles) from Earth, the farthest distance yet attained by a man-made object.

The spacecraft is traveling about 80,000 kilometers per hour (50,000 mph) on its flight path out of the solar system, and is expected to reach the orbit of Saturn in March 1976.

Communications time from Earth to Pioneer 10 and back has now increased to an hour and 42 minutes.

On Pioneer 11, all systems continue to run well. The spacecraft will reach Jupiter next December 5, and may then go on to Saturn.

The Pioneer 10 meteoroid detector has experienced two hits since leaving Jupiter. This suggests about the same concentration of the tiny, high-velocity dust particles beyond Jupiter as Pioneer found between the outer edge of the Asteroid Belt and Jupiter.

Pioneer 10 continues to function well. Minor changes in spacecraft systems caused by passage through Jupiter's intense radiation belts now have

either disappeared, or are having no effect on performance.

One of Pioneer 10's cosmic ray instruments suffered some loss of functions when it went through the radiation belt, and experimenters now are assessing the seriousness of this.

As the spacecraft moves even further away, its Sun sensor, which measures the spin rate of this spacecraft, must look closer and closer to the Sun. This could cause some loss in the accuracy of spin-rate measurements which must be known so exact observation direction can be calculated for the Pioneer 10 instruments, as they look out from the rotating spacecraft.

The sun sensor must look close to the Sun for the spacecraft narrow-beam dish antenna has to point constantly at the Earth for good communications, and the pointing direction of the sun sensor is close to that of the antenna. Looking back from distances of up to two billion miles from Pioneer, the Sun and Earth appear almost on a line.

Pioneer controllers are also taking measures to anticipate possible losses in sun sensor accuracy.

Pioneer 11 has so far experienced eight hits on its meteoroid detector by high-velocity meteoroids in the Asteroid Belt. Taking into account design differences between the meteoroid detectors aboard Pioneers 10 and 11, the Pioneer 11 instrument has experienced about the same rate of penetrations in the Asteroid Belt as Pioneer 10.

## NASA To Hold Conference in March

A conference to explain NASA's liberalized patent licensing procedures will be held March 14 in Jacksonville, Fla.

The conference is designed to help the business community obtain licensing rights to NASA-developed technology which may have commercial product potential. More than 2,600 NASA patents are available for exclusive and non-exclusive licensing to qualified business interests.

The one-day session will be held at the Robert Meyer Hotel in downtown Jacksonville. It is being organized for NASA by the North Carolina Science and Technology Research Center, Research Triangle Park, N.C. The Center is part of an information dissemination network jointly sponsored by NASA and the State of North Carolina.

Under liberalized procedures authorized in 1972 by the President, NASA can now grant exclusive licenses in appropriate cases as soon as nine months after the announcement of an invention.

Special topics to be covered by the conference include a review of the patent licensing program; how NASA field center patent counsels can help business; the role played by NASA regional information dissemination centers, and examples of technology transfer to the business community.

The conference is open to all interested U.S. business persons. The \$20 registration fee includes a copy of the NASA Patent Abstracts Bibliography—a document normally costing \$18—which lists all NASA patents available for licensing, and a custom search of the patent file in each participant's specific field of interest to identify possible patent licensing opportunities.

Additional information concerning the conference may be obtained from Peter Chenery, Director, North Carolina Science and Technology Research Center, P.O. Box 12235, Research Triangle Park, N.C. 27709. Telephone: 919/549-8291.

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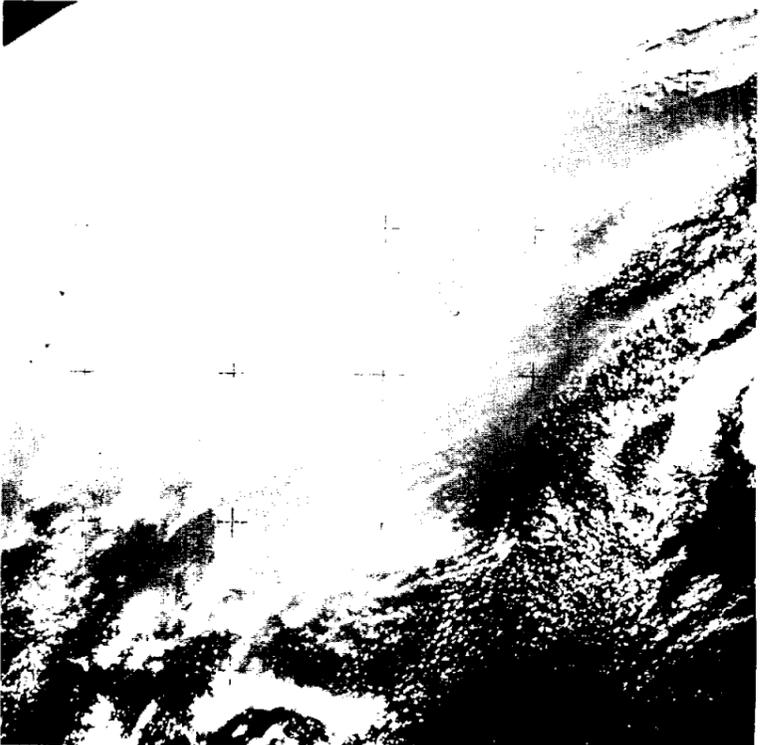


COMET KOHOUTEK—This photograph of the Comet Kohoutek was taken by members of the lunar and planetary laboratory photographic team from the University of Arizona, at the Catalina Observatory with a 35mm camera on January 11, 1974.

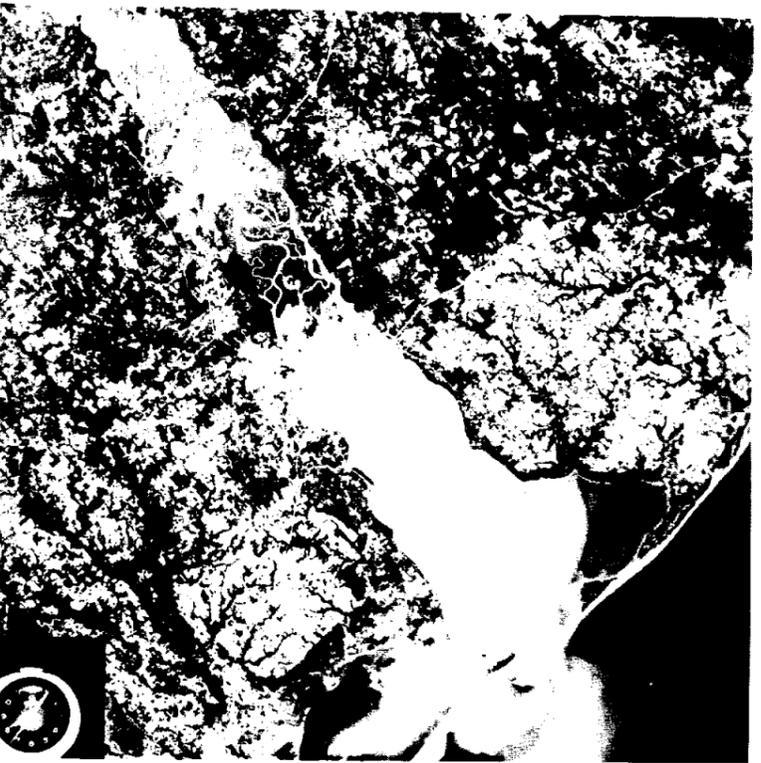
# Skylab Cameras Photograph Unique Earth Views



INFRARED FLORIDA—Cape Canaveral; Kennedy Space Center (KSC); Vero Beach, Banana River, Indian River.



JAPAN AND KOREA—Honshu, Kyushu, Tsushima; volcano plume is seen out as far as 275 kilometers in this view.



ALABAMA—Mobile Bay, Mobile River, cities of Mobile and Pascagoula; Dauphin Island.

## Energy

(Continued From Page 1)

tion. The Johnson Space Center is not served by mass transit.

While the first part of JSC's energy conservation program has been very successful, part two is expected to take longer to reach its goals.

Among the areas likely to benefit from investments in improved technology are heat production and utility control.

Center officials are now considering a plan to reclaim heat lost through the exhaust stacks from boilers at the Central Heating and Cooling Plant. An engineering study will be necessary to determine the most effective technique and to calculate the potential savings.

A computerized control system to manage power uses at the center is also under consideration as a means of saving energy and dollars through technological investment.

Part three of the energy conservation program is expected to receive attention from scientists and engineers at the Johnson Space Center for many years to come.

A program to design cities and building complexes that use less energy and produce less refuse and pollution has been underway for some time at JSC.

## Crew

(Continued From Page 1)

was getting an excellent view of the Comet Kohoutek during an EVA.

"That Comet was just gorgeous up there in the sky right near the Sun. The Sky was so black and the comet was so brilliant. It was just really a gorgeous sight from the mission that I'll never forget." Carr said.

Carr added that an important aspect of Skylab was establishing the need for man in space; not just robots and satellites.

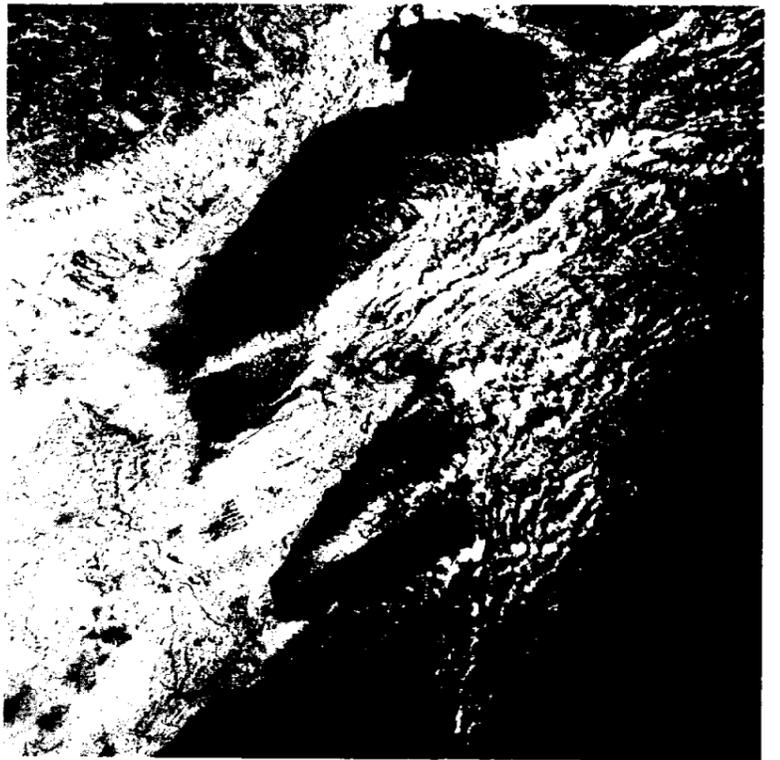
## Classes Begin

Music, art, language, dancing, cookery and theater classes as well as unusual workshop and discussion groups are included in the pre-spring program of the Houston Young Women's Christian Association (YWCA) Bay Area extension program.

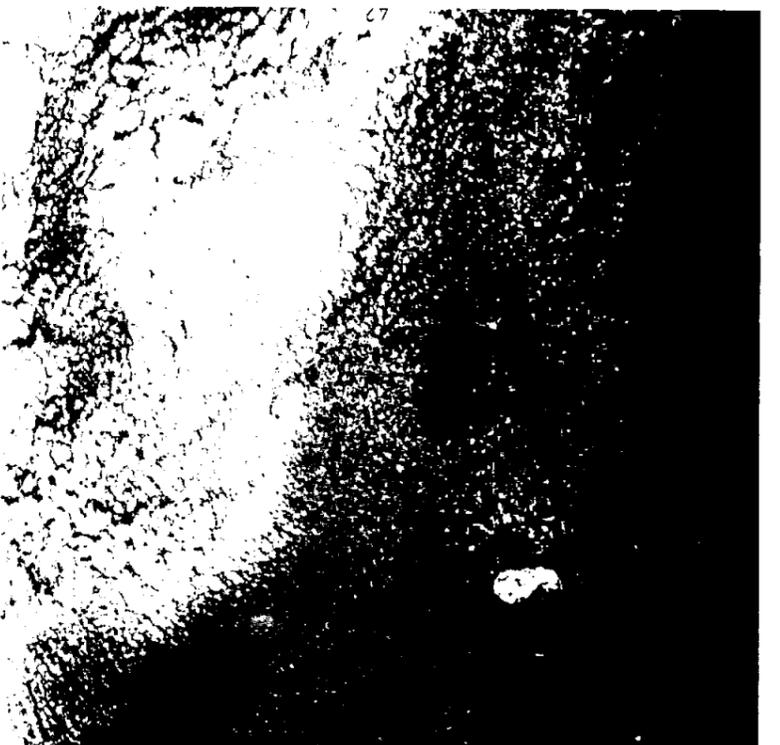
Classes in more than 25 activities recently began at the Music Arts Center, 218 S. Walnut, Webster, Texas, one block south of NASA Road 1. Baby sitters are available during most of the class hours.

New offerings include a teen theater workshop, Chinese cookery, and group music lessons. Most classes will run for six weeks.

For further information concerning the classes, call the Music Arts Center, 332-1144, or the Houston YWCA, 222-8261.



ONTARIO AND NEW YORK—Pennsylvania, Michigan, Lake Ontario, Lake Erie, Toronto, Hamilton, Niagara Falls, Buffalo.



AUSTRALIAN RANGELAND—Southern Murray River Basin, located in the northwestern part of the state of Victoria. Murray River (corner); dry lake Tyrrell; Lake Buloke, and Lake Albacutya (partially under clouds).



COLORADO—Rocky Mountains, with Denver appearing as the dark area at range's edge. Arkansas, Gunnison, Colorado, White, Yampa and South Platte Rivers.