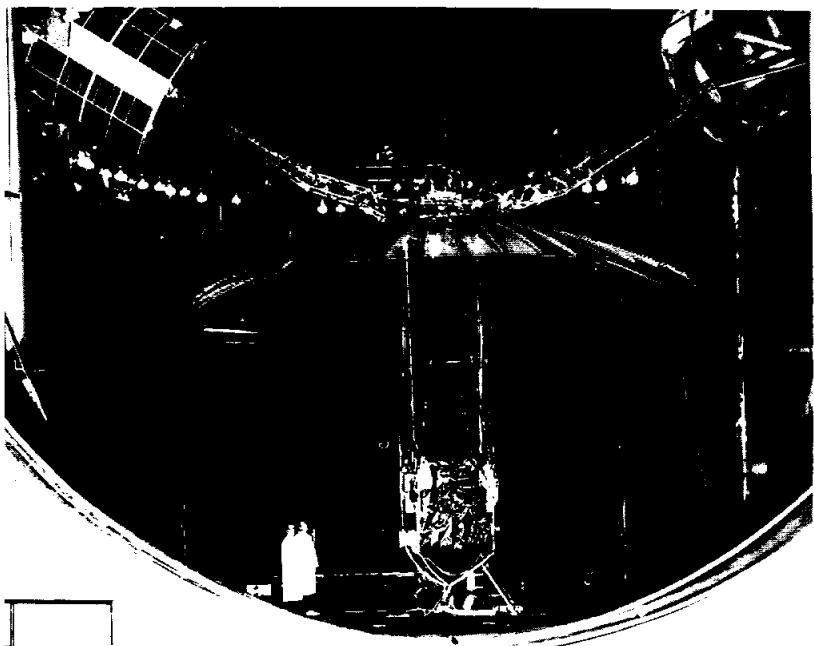




# Where on Earth Do You find the Space For Space Tests



TESTING—A test model of the Applications Technology Satellite is seen during checkout activity in Chamber "A" of the Space Environment Simulation Laboratory here at JSC. The 30-foot diameter umbrella-shaped antennae was checked to determine if it would deploy properly in the harsh environs of space. This satellite is scheduled for launch in Spring next year and will achieve a synchronous orbit over the U.S. and later over India.

## Recapping Fire Week

Fire Prevention Week continues high on the list of important events on this Center's calendar. This year's observance was highlighted by a variety of instructional programs presented by the JSC Fire Department to instruct people in the most effective methods for combatting fire. The demonstrations were well attended at various locations around the site as the firemen applied their skills and equipment to the flames.

A new speed record for safe and orderly evacuation was set at Building 2 on October 9, as all personnel cleared the building within 7 minutes. The first fire drill, which was staged several years ago, was accomplished in 11 minutes. The 4 minutes saves represents an important improvement in efficiency which could be of critical importance if a fire emergency were to occur.

Fire Chief P.J. Scardino offers the following suggestions for further improvement of firesafety procedures:

In the event of a fire drill, notify firemen of the presence of any handicapped people in the building. Handicapped people are instructed to await evacuation at the elevator locations. In a real fire emergency, firemen would decide whether or not the

elevators could be safely used. Also, firemen can place an elevator on independent circuits which controls the elevator movement from within the elevator car.

Elevators should be avoided by evacuees, both during a drill and a fire, because if a fire reaches an elevator shaft, the shaft serves as a chimney. Updraft air currents sweep smoke and lethal gases through the shaft, creating conditions extremely hazardous to life. Also, there is a chance that the elevator will top on the floor which is involved, thus allowing the elevator to fill with smoke and fire when the doors open. For these reasons, even during a drill exercise, use of the elevators should be left to the discretion of the firemen.

Close all doors behind you. This is vitally important because fire feeds on oxygen. Closing doors cuts off the flow of oxygen and enable partitions to serve as fire walls which impede the progress of the fire.

When you get outside of the building, clear away from the exit to at least 200 feet from the building. This makes it easier for those behind you to get out and gives the firemen room to work.

## EREP Hardware Evaluation Set

The Johnson Space Center will issue a \$1.2 million cost-plus a fixed-fee supplemental agreement to the existing Skylab Payload Integration contract with the Martin Marietta Corporation, Denver Division.

The supplemental agreement is for Earth Resources Experiment Package (EREP) Hardware Evaluation, and includes evaluation of EREP hardware performance during the Skylab

missions. The results of the hardware performance evaluations, to be performed at the Martin/Denver, Colorado facility through June, 1974, will be provided to scientific investigators for use in their analysis of EREP scientific data.

The \$1.2 million supplemental agreement will bring the total estimated cost of the Skylab Payload Integration contract to \$104.7 million.

How do you test a large satellite with a 54-foot span realistically in the harsh environment of space before actually launching it?

Johnson Space Center offered the solution recently when it tested a model of the Applications Technology Satellite for the Goddard Space Flight Center. The test was staged at the large vacuum chamber in the Space Environment Simulation Laboratory here.

In the ATS test in mid-September, the test model of the satellite was checked out to see if its 30-foot diameter umbrella-shaped antenna would unfold properly in a space vacuum. The test model was hung by cables from the chamber's top dome for the test which lasted about 20 seconds--after weeks of preparing and instrumenting the satellite.

Actual unfolding of the parabolic antenna only took 1.45

seconds, but Goddard engineers not only wanted to test the antenna mechanism itself, but the effects of the unfolding action on the whole satellite.

For the test, the vacuum chamber was pumped down to an equivalent pressure altitude of 225,000 feet, effectively eliminating all atmosphere damping forces to simulate orbital antenna deployment.

The 300-pound ATS-F is scheduled for launch in the spring of next year atop a Titan IIC launch vehicle into a 22,000 mile high synchronous orbit, first above the U.S. and later over India.

While in its fixed position over the U.S., ATS will be used as a test-bed for experiments in communications technology, weather forecasting and aircraft traffic control. ATS will also serve as a relay station for educational telecasts to remote areas of the continental U.S. and

Alaska.

After a year in position over the states, the ATS will be shifted to a point over India to serve as a relay station for an Indian government innovation into beaming instructional television to low-cost community receivers in remote rural areas of the Indian sub-continent. Occupational training, health improvement and teacher training are among the topics planned for programming through ATS relay by the Indian governments.

ATS spacecraft prime contractor to Goddard is Fairchild Industries, Germantown, MD. Principal managers for the September vacuum chamber test at JSC were Goddard test manager Roy Courtney, Fairchild project manager J. E. Ferrell and test manager Howard Green of the Space Environment Test Division, JSC.

## Lunar Lab's Equipment Called "A Tremendous Find" for the AEC



Continued from Page 1  
was called by Winburn a "tremendous find." "Never in my 25 years experience with research programs have I ever seen a whole laboratory transferred to another agency," Winburn said.

The AEC received the equipment for "cost of acquisition," which came to about \$50,000 for dismantling, packing and shipping. The AEC team, headed by Winburn, spent about a week taking the lab apart and packing the chambers, lines and electronic devices inside specially prepared scientific shipping vans. A total of four 40-foot vans were loaded and sent on their way to New Mexico.

Winburn said he expected the equipment to be in use for the next ten years. "But you know,

if our research proves efficient we may find we don't need this equipment for very long. It's always difficult when you complete research rapidly, you wind up feeling good about the research itself, but you wonder if you got all you could out of the equipment."

"Even if we complete our experiments and no longer need this equipment, it will be put to other uses here at Los Alamos," he said.

NASA personnel who were working with the Lunar Receiving Lab were reassigned to other duties when it closed in June. The essential scientific research functions of the LRL have been taken over by the Lunar Curatorial Facility in Building 31. Only the Gas Analysis and Radiation Counting Laboratories

LRL stainless steel lines, pumps and vacuum chambers are shown here being disassembled by AEC Los Alamos Scientific Lab technicians.

remain in Building 37.

Lunar Sample Curator Michael B. Duke noted that the Lunar Curatorial Facility, which opened early last year, "gives us the opportunity to focus on individual samples rather than occupying ourselves with the large quantities of material that had to be processed following each lunar flight."

Presently, NASA continues to support some 183 principal investigators in the U.S. and 14 foreign nations as part of the lunar research program.

# 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

Three carat Diamonette ring, Tiffany setting on white brushed gold, wide band - will sacrifice for \$125. Judie Ext 5111.  
 File cabinets, 2-dwr, gry metal prof/office type, roller-bearing drwrs, 27x14 1/2-x30, \$22.50 ea. 645-7329 aft 5.  
 Drum set, W.F. Ludsig, 22" cymbal, bass, snare, 2 tom-toms and high hat cymbals, \$150, 488-3866.  
 Worldbook/Childcraft encyclopedia, Kilbourn 432-7879.  
 Bell & Howell Focustronic Autoload Super 8 camera, used 3 x, \$125, Wain Ext 3138.  
 Polaroid Big Shot camera, \$5, Wain Ext. 3138.

Cassette recdr. Lafayette RK87, AM-FM with built in mike, extra plug-in mike, 30-mn cassette and AC adptr, 4 mos old, \$50, Weitz 333-3071.  
 TV, 18" Philco B & W VHF/UHF w/stand, \$50, Weitz 333-3071.  
 Tappan 30" gas range, less than 1 yr old, \$80, 946-0704.  
 Rugs, early American braided, fair cndn, oval 9x12 \$15, 61 6/9 6x9/\$10, 488-4487.  
 Queen size Sealy Posturalpedic mat-box sprgs, exc. cndn \$150, 333-4666 aft 5.  
 Sofa, Italian Provincial 100", American of Martinsville, antique white, exc. cndn, 334-2060.

### PROPERTY & RENTALS

Lease 3-1-1. Unfurnished ro A/C, convenient to EAFB & JSC, 626 Arvana, Houston, \$140/mo Biggs, 487-2978.  
 Sale, Nassau Bay, 4-2 1/2-2 Spanish, 2450 sq ft, frnt crt yd, scrnd patio, landscaped, new crptng in bdrms, \$49,700, 333-2880 evng & wknds, 488-3353 dys.  
 Large 4-2 1/2-2 brick custom house on 1/2 acre wooded lot plus workshop, \$49,000, 534-6667.  
 Lease, 3-2-2 Plus studio on lg wooded lot in Shoreacres, \$260/mo Plus \$100 deposit, 471-2263 aft 5.

### PETS

Registered quarter horse saddle and tack, Folsie, 945-2573.

### VEHICLES

Schwinn Cotton Picker 5-speed, frt drum brk, shk absng frnt fork, frnt & rear hnd brks \$25, 534-3385.  
 72 BSA cycle B25T, for dirt or road, xtra fender set, sprocket, muffler for dirt, Low mileage exc \$500, 554-3884.  
 New 5-speed steel frame women's bike \$70 Wain Ext. 3138.  
 65 Corvair Corsa, 51,000 miles, 4 carbs, 140 HP, 4 on flr, 19 mpg, commute car, body & int fair, engine & tires good, tach & radio \$400, Castle 332-4209.  
 For Rent: 72 Jayco hdtp foldown camper, Kitchen, frig, sleeps 8 - \$10/dy, \$57/wk (\$25 min. deposit req) Kilbourn 482-7879.  
 175cc Yamaha Enduro, running cndn, xtras, as is, \$275, Reeves 482-7233.  
 65 Buick LeSabre 400, gd mtr, tires, brks, \$500, Sawyer 482-7906.  
 66 Ford V8, good work car, \$250, 534-6667.  
 72 Chrysler, 4 dr, vinyl top, full acces, exc cndn, \$2500, 471-4539.  
 Thunderbird foldout camping trailer, \$300, Bell Ext. 4933 or 482-6357.  
 67 100cc Yamaha, needs minor work, 481-4190 Wknds.  
 Hodaka Super Rat 100, reed valves, exc cndn, \$395, 334-1485.  
 Camper, swingout stove, frig, sink, water, wardrobe, canopy, white tires, dinette, sleeps 6, exc. cndn, \$1195, Hixon 482-1659.  
 71 Pontiac Catalina, 2-dr, vinyl HT, A/C Pwr str & brks, 350 V8, low mileage, new tires & battery, 483-5293.

69 Buick LeSabre, 4-dr sedan, A-1, Dickinson 534-3113.  
 71 Ford Maverick, 2-dr, Grabber package, 302 V8, A/C, P/S, A/T, rad exc. cndn, N. Jervas 644-5832.  
 1947 Harley, runs & looks good, all original, \$1400, Anderson 485-5965 aft 5 or wknds.  
 Anderson, 485-3205 or Ext. 3851.  
 Camper shell, fully insulated for short, narrow bed pickup, 481-5965 aft 5 or wknds.  
 69 Chevy pickup, V8, standard trans, camper cover, rad, low mileage, under warranty, exc cndn, in and out \$1700, 333-2509.  
 Competition go-carts, Margay Mark I Cheetah Sprint and Margay Sidewinder Sprint w/hydraulic discs, vg cndn, your choice \$250, chassis, swing mount & sprocket, 33-2787.  
 64 Dodge D-100 pickup, 6, stick hydraulic clutch, rad/htr, 55,000 actual miles, \$350 or best offr, Regan Ext. 2891.  
 67 Chevelle spt cp, auto, A/C, pwr, new tires, \$650, 481-2535.  
 72 Fiat 850 Spyder w/rad & htr, 11,000 miles, exc. cndn, \$1600, Vern Shields, 422-8404.

### WANTED

Old fshnd baby carriage w/adjustable top, usually blk in color, Williams Ext. 2231 or 747-3178.  
 Ladies 26" coaster brk bike in good cndn, Largent, 946-4075.  
 Used rock tumbler: set of Nancy Drew and Hardy Boys books, 488-5028.  
 Need student desk, gd cndn, Richards Ext. 5441 or 488-5546.  
 Car pool from Southwest Houston to JSC, 8:30 - 5:00, call Joan Ext. 3041.

## First Blood Drive Under New Plan

Wednesday of next week is a red letter day. That's when the second NASA blood drive for federal and on-site contractor employees will be held at the Gilruth Recreation Center. Blood donors are asked to call either Lew Wynn (Ext. 3428) or Helen Crawford (Ext. 3899) for appointments.

This is the first drive under a new Employee's Activities Association contract with St. Luke's Episcopal Hospital of Houston. Under the new plan the donor's spouse, unmarried dependent children under 23 years of age who are either full-time students and/or living in the same household and dependent parents living in the same household are eligible for benefits.

If a donor is hospitalized outside the greater Houston area, blood replacement will be made by St. Luke's through the American Association of Blood Bank's National Clearinghouse System wherever possible.

## Telemetry

Continued from Page 1

A defibrillator for external heart simulation.  
 A semi-automatic indirect blood pressure measurement system using a special microphone placed beneath a hand-inflated cuff, similar to the blood pressure device used in the Skylab program.

# New Flight Method A Success in First Test

The first flight of a Remotely Piloted Research Vehicle (RPRV) has been successfully completed at NASA's Flight Research Center, Edwards, CA.

The new flight research technique was developed by the Flight Research Center and is expected to provide a far more economical method of flight testing experimental air and space craft. The new method should also be less hazardous for various types of flight tests such as spin testing.

First application of the new method was to fly a three-eighth scale model of the U.S. Air Force's new high performance F-15 fighter at relatively high angles of attack. The pre-flight plan was revised just prior to the test at the Flight Center and the scale model of the F-15 flew at a 26 degree angle of attach.

Eventually the 23-foot RPRV model will be flown through stall and spin maneuvers.

The RPRV was air launched from a B-52 flying at 45,000 feet. It was then controlled from a ground control station located within the Flight Research center by NASA research pilot Einar K. Enevoldson. He was seated in a special cockpit complete with flight instruments and a television screen. Flight commands were fed from the pilot through a computer, pre-programmed with the flight characteristics and simulated control systems of the F-15, and then telemetered to the RPRV.

Flight information from the RPRV as well as video signals from a TV camera installed where the pilot's head or eyes would normally be, was transmitted to the ground control station.

The RPRV was originally scheduled for a 9-minute duration flight, but actually gathered 11 minutes of flight data time. The RPRV then descended to an

altitude of 15,000 feet at which point parachutes slowed its descent.

A helicopter was used to effect a mid-air recovery of the test aircraft.

As opposed to other remotely piloted vehicles which use an autopilot type of control system, the RPRV test pilot remains in continuous direct control of the test model at all times using conventional full authority flight controls and a complete set of flight instruments. This allows the pilot to perform all of the precision flight maneuvers such as wind-up turns, control pulses and other unusual control maneuvers for flight test data.

The pilot remarked at the end of the test that the control systems and television monitoring were excellent although he thought it would not replace actual flight testing.

To develop this new technique, Flight Research Center engineers and pilots flew a modified twin-engine aircraft with a preliminary version of the remote control system through its entire envelope, including a ground-controlled landing.

## Roundup Reader Sends Ode to Bean

Roundup reader Royal Rousel in Palacios, Texas, sends the following ditty, which he says goes with the tune of "Delta Dawn". . .

Alan Bean, Alan Bean  
 What miracles you have seen  
 In orbit in your station way  
 up hi-i-i-igh

And now we wait the day  
 When the next ones blast  
 away  
 To occupy your mansion  
 in the sky-y-y-y.



PUBLIC SERVICE CAREERS—Trainees in NASA's PSC program recently completed their training and were awarded graduation certificates by Deputy Director Sigurd Sjoberg, at left. From l to r, the graduates are Mrs. Joslyn Allen, Mrs. Yvonne Henson, Mrs. Marva Carr, Mrs. Clara Thornton, Miss Lela Benton, Mr. Sam Coleman, Miss Patricia Henson and Miss Debby Sims. This was the second graduating class in the Civil Service Commission program here. The program provides disadvantaged employees to agencies for a 1-year period without charge to personnel ceilings. In return, the agency is expected to provide training and work experience.

## Radio Club Sets Auction

The JSC Amateur Radio Club will hold a ham and electronic gear auction on November 10 at the Clear Lake Park Community Building on NASA Road 1. Doors will open at 8 a.m. for setup and tagging. Auction hours will be 9 a.m. to 2 p.m. Only good working or serviceable gear will be accepted for auc-

tion. The Club will net 10 percent of the selling price up to a maximum of \$5.00 per item sold and 10 percent up to a maximum of \$1.00 per item redeemed. Coffee, donuts and soda will be available at cost. For further information call Ed Hamblett, W5BH at 483-4031 or 471-0348 after 6.

## ROUNDUP

NASA LYNDON B. JOHNSON SPACE CENTER      HOUSTON, TEXAS

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 Editor: Janet Wrather      Photographer: A. "Pat" Patnesky

# Most Extensive Array Ever To Study Comet



MARINER 10—This 1,100 pound spacecraft, with about 170 pounds of scientific equipment, will be part of the vast assortment of electronic apparatus trained on the comet as it approaches and recedes from the sun.

"We would like to know more about cometary origin. Are they remnants of the formation of the solar system, or are they interstellar matter captured by our Sun?"

Probably the most important objective in studying Kohoutek is to find out whether or not there is such a thing as a solid comet nucleus.

Currently, most astronomers accept the "dirty snowball" theory of Dr. Fred L. Whipple, senior scientist at the Smithsonian Astrophysical Observatory. He holds that comets have a solid nucleus composed of ice methane, ammonia and dust particles. As a comet nears the Sun, its surface heats; the gases vaporize and their molecules are broken up by solar radiation into less complex molecules. These "daughter" molecules and dust particles expand into the comet's head --- or coma --- and provide material for its tail.

Kohoutek is believed to have nucleus of 12 to 19 miles, while the comet's head may have a diameter of 60,000 miles or more.

Comet tails can stretch tens of millions of miles. The longest yet measured extended out to more than 186 million miles from the Great Comet of 1843; the tail of Halley's Comet in 1910 reached out 90 million miles.

Kohoutek's tail may eventually stretch across one-sixth of the night sky just after sunset around New Year's Day, extending out 50 to 100 million miles.

Approaching the Sun, the tail will be behind the comet, but leaving our Sun the tail will precede Kohoutek. This effect is caused by the solar wind --- the Sun's constant outpouring of particles --- and by solar ultraviolet rays, which push matter away from the comet's head, in the direction opposite the Sun.

The comet, whose official designation is 1973 (the sixth

comet discovered in 1973), is named for Dr. Lubos Kohoutek, a Czech-born astronomer at West Germany's Hamburg Observatory. In a classic example of serendipity in science Dr. Kohoutek discovered the comet last March while photographing the night sky in search of asteroids.

The unexpected discovery gave scientists an unprecedented 9 1/2 months to prepare. Most comets give scientists only one or two months notice.

Traveling at a speed of 250 million miles per hour comet Kohoutek will reach perihelion (13.2 million), its closest point to the Sun, on Dec. 28. It will come within 75 million miles of Earth on Jan. 5.

Estimates of its brightness range from minus 6 to minus 12 on the astronomical scale. Sirius, the brightest star in the sky, has a magnitude of minus 1.47, and the full Moon a magnitude of minus 12.

The fiery object may have begun its journey to the solar system 10,000 years ago.

Major elements in Operation Kohoutek follow:

The most important viewing capability, according to Dr. Maran, is that provided by Skylab, presently orbiting the Earth above the obscuring effects of the atmosphere. Instruments on board provide a broad capability for comet observations over a wide range of spectral bands, including infrared, ultra violet, and visible light.

In addition, Naval Research Laboratory scientists are preparing a special camera similar to the one sent to the Moon on Apollo 16. Called the S-201 electrographic camera, it will be sent with the astronauts on the Command Module, scheduled for launch November 11 from Kennedy Space Center.

The S-201 will be mounted in the Skylab workshop to photograph the enormous cloud expected to form as the comet approaches the Sun. The cloud produces light only in the far ultraviolet, a wavelength which can't be observed from the ground because it is filtered out by Earth's atmosphere.

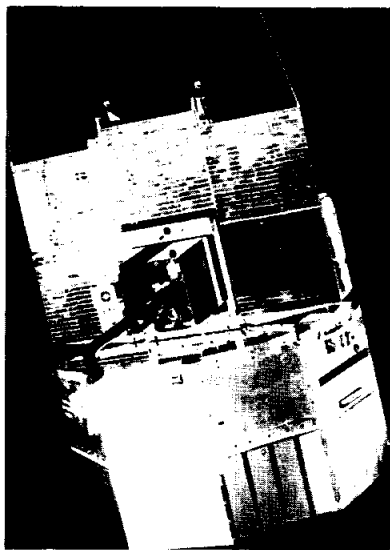
Eight solar and astronomical instruments on Skylab will permit the crew to monitor Kohoutek in the UV and visible light ranges, regardless of how narrow the angle becomes between the line to the Sun and the line to the comet. This is critical because Kohoutek's Sun angle will be less than 45° throughout most of the prime viewing period. Of particular importance are three ATM instruments which will be able to view the comet when it is the brightest, and when groundbased observations will be very limited in scope due to sunlight scattered in the atmosphere.

Mariner 10 scheduled for launch on Nov. 3, will take pictures and obtain data on the comet from an altogether different angle as the spacecraft speeds toward its target planets of Venus and Mercury. Working together, Earth-based cameras and Mariner 10 are expected to produce a stereoscopic image of Kohoutek. This should give astronomers, for the first time, a true picture of the shape of a comet as distinct from its appearance seen from one angle.

Dr. Richard Goldstein and his associates at JPL will attempt to bounce radar signals off Kohoutek. From the returning signals, they may be able to learn something about the makeup of the nucleus.

Copernicus, Goddard's Orbiting Astronomical Observatory (OAO-3), orbiting Earth at a distance of 415 miles will look for such things as the deuterium/hydrogen content, the velocity and production rate of the atomic hydrogen in the comet head, and the average temperature of the hydrogen atoms.

Orbiting Solar Observatory 7 (OSO-7), another Goddard Spacecraft, will photograph the comet next to the Sun and look for ionized helium from its Earth orbit of 425 by 298 kilometers (274 by 187 miles).



OSO—This shows the Orbiting Solar Observatory, one of several spacecraft which will be trained on the comet Kohoutek as it approaches the sun.

One University of Colorado payload consists of highly sensitive extreme ultraviolet spectrograph using a newly developed microchannel plate in lieu of conventional phototubes. The other Colorado payload is similar to the UV spectrometer which went to Mars on Mariner 9.

Goddard Space Flight Center

will fly a 12-inch diameter telescope on its Aerobee, to obtain images of the comet through different ultraviolet filters. It will look for a bright emission core, discovered in one



COMET—Kohoutek is shown here as it appeared in late April from the 36" telescope at Kitt Peak National Observatory.

previous comet, also by an ultraviolet rocket telescope.

The NRL payload consists of two cameras and a spectrograph. One camera will take pictures of the comet's hydrogen cloud while the other will look at the coma in longer wave lengths. The spectrograph will be used to identify cometary constituents including atomic oxygen, carbon monoxide, molecular hydrogen and atomic carbon.

Ames Research Center, Mountain View, Calif., will fly a C-141 carrying a 36-inch telescope at altitudes up to 50,000 feet to look at the infrared spectrums of the comet in order to determine chemical composition of the icy substances of the nucleus. An Ames Lear Jet will carry a smaller infrared telescope for comet studies.

The University of Arizona will launch two balloons for NASA—one in November and one in the spring, to study far infrared light with an 8-inch, gold-coated, telescope mirror.

The Joint Observatory for Cometary Research, a special observatory with a twin dome Schmidt telescope facility on top of South Baldy Mountain in New Mexico, is being completed to get rapid sequences of black-and-white and color photographs of Kohoutek from the 10,600-foot elevation.

The University of Denver will use a NASA-funded 24-inch infrared telescope located at 14,260 feet altitude on Mt. Evans, Colorado, to study chemical substances in the comet head. Minitrack Optical Tracking Systems (MOTS) cameras at NASA tracking stations around the world will permit near-continuous monitoring of events in the comet tail as it reacts to solar wind disturbances in space.

Searches for water and ammonia radiation from the comet will be carried out by GSFC and University scientists at the Northeast Radio Observatory

Corp. in Massachusetts. Five Aerobee sounding rocket flights are planned from White Sands, New Mexico beginning Jan. 5 through 12 at sunset. The project is under the direction GSFC with scientific experiments provided by the Naval Research Laboratory, John Hopkins University, University of Colorado (2 payloads), and the Goddard Space Flight Center.

## Awards

The Space Agency honored 77 individuals and five organizational groups for outstanding contributions to the U.S. space effort at NASA's 15th annual ceremony yesterday.

Five NASA employees received the agency's highest award, The NASA Distinguished Service Medal. They are Arnold W. Frutkin, Assistant Administrator for International Affairs, S. Neil Hosenball, Deputy General Counsel, Roy P. Jackson, Associated Administrator for Aeronautics and Space Technology, William E. Lilly, Comptroller, and Robert H. Gray, Deputy Director of Launch Operations at Kennedy Space Center.

JSC employees to receive the Exceptional Scientific Achievement Medal are:

Dr. Joseph P. Allen, IV, scientist-astronaut, "In recognition of his outstanding accomplishments as Mission Scientist for the Apollo 15 mission."

Dr. Peter Robin Brett, "For exceptional service in carrying out a creative program of lunar sample analysis...and actively conveying the important results...to the scientific community and the public."

Dr. Anthony W. England, scientist-astronaut, "In recognition of his outstanding accomplishments as Mission Scientist for the Apollo 16 mission."

Dr. Robert A. Parker, scientist-astronaut, "In recognition of his outstanding accomplishments as Mission Scientist for the Apollo 17 mission."

Robert O. Piland received the Outstanding Leadership Medal "In recognition of his outstanding contributions to NASA's Earth Resources Laboratory at the Mississippi Test Facility."

## Arts & Crafts

The next crafts classes will begin Monday, November 6. At that time the club will be working with Christmas candles and gifts. The session will run through December 10.

Thursday nights have been set aside as Arts & Crafts workshop nights. Room 209 is the location and for \$ .50 a night individuals will be able to work on whatever they please.