

ORBITER FRONT OFFICE — Taglines and many eyeballs assure careful lowering of the crew compartment into Space Shuttle Orbiter 101's forward fuselage. The crew compartment was mated to Orbiter 101 early in January at Rockwell International Space Division's assembly plant in Palmdale, California. Orbiter 101 rollout is scheduled for September. (RI photo)

## Kleinknecht Moves To Orbiter Office

In a JSC management change effective January 9, Flight Operations Director Kenneth S. Kleinknecht has been assigned as Orbiter Project assistant manager. Technical assistant to the JSC Director George W. S. Abbey has been appointed acting Director of Flight Operations.

Abbey's position on the JSC Director's staff has been filled by Henry E. "Pete" Clements, who recently returned to JSC from NASA Headquarters where he was executive officer to the Administrator. Clements formerly was chief of the JSC Flight Support Division.

In making the changes, JSC Director Christopher C. Kraft, Jr. said, "The growing demands of the Space Shuttle Program have increased the need for hardware and program management expertise. Kleinknecht has had broad experience in program management at JSC in the Mercury, Gemini, Apollo and Skylab programs and will add significant management expertise to the Orbiter Project."

## EOC Meets Next Week

The Equal Opportunity Council, consisting of deputy directors and equal opportunity program officers from each NASA center, will meet at JSC January 10-21.

Agenda items include the Minority Business Council, Federal Women's and Spanish-Speaking Programs, NASA Engineering Scholarship Proposal, and Equal Opportunity Council rules and regulations.

## JSC Specialists Develop Low-Cost Water Mapping

Countries that have no inventory of their water resources can obtain accurate maps of their lakes and reservoirs from satellite data at relatively small cost by using a new JSC computer program.

State agencies can use the program to make better choices between recreational and industrial use of available water supplies.

The JSC-developed computer program uses digital data from LANDSAT Earth resources survey satellites to compile maps at any desired scale showing surface water areas in excess of six acres.

Specialists in the Earth Observations Division at JSC say the new system, called the Detection and Mapping (DAM) Package, is so simple that only \$300 worth of computer time is needed to map more than 33,800 square kilometers (13,000 square miles).

Paraguay, as an example, could obtain high-quality surface water maps of the entire country 408,200 sq km (157,000 sq. mi.) for less than \$10,000, including all computer and labor costs.

Since NASA's two LANDSATs cover about 95 per cent of Earth's land mass, surface water maps can be produced by this system for virtually all populated regions.

## Credit Union Changes Rules For Elections

The board of directors of the JSC Credit Union has adopted new voting procedures for the election of board members and other elected positions. This new voting procedure varies significantly from the procedures of past years. The new procedure is expected to increase the participation of members in the election. Nomination for elected position will no longer be accepted from the floor during the annual

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Accuracy of the program is almost 100 per cent for areas of water 4 hectares (10 acres) and larger. Position accuracy, the degree to which the computer-produced water maps match the terrain in question, is within 90 meters (300 feet) of dead center.

The JSC scientists who developed the system explain that user training is very brief, typically as short as one day, and no computer or remote sensing experts are needed for the water mapping program.

The US Army Corps of Engineers used the DAM Package to map water resources in Washington and Tennessee. The Texas Water Development Board has used the program for regional water mapping in Texas and regional agencies in Oklahoma have also used the program.

## NASA Publishes Apollo Book

A profusely illustrated, 324-page book on the Apollo program, written by 18 key members of the team that successfully planned and carried out the enormous national effort to land men on the Moon, has been published by NASA.

Called *Apollo Expeditions to the Moon*, the volume is edited by Edgar M. Cortright, former Director of the NASA Langley Research Center. The purpose of the book, Cortright says, is "to record the story of Apollo before the colors fade and memories blur."

Its 15 chapters tell the dramatic story of what are perhaps the most exciting and challenging scientific voyages in modern history — voyages that symbolize the triumph of man and technology over seemingly impossible odds.

The book also provides a broad insight into the United States civilian space program since its inception to the present.

The 18 contributors include current and former key NASA officials, astronauts, engineers and scientists. Each describes his role in helping to make the almost overwhelmingly complex Apollo mission successful.

It is also an "insiders" story, revealing many little-known and unreported aspects of the program. For example, few people are aware that the five nuclear-powered automatic stations left on the Moon beginning with the Apollo 12 flight in 1969, continue to transmit important scientific information to Earth. Each is capable of sending about nine million data readings a day on the lunar environment.

In his foreword to the book, Dr. James C. Fletcher, NASA Administrator, summarizes the legacy of Apollo in these words:

"New scientific insights are an important part of Apollo, as well as the worldwide lift to the human spirit that the achieve-

## JSC Experiment Recovered As Kosmos Thumps Down

All four US biology experiments recovered from the Soviet Kosmos spacecraft late last month are in good condition and initial analyses are "very encouraging," according to NASA officials.

Lawrence P. Chambers, program director, said specimen analyses have been started by scientists in West Germany, the University of Louisville, Bryn Mawr College, State College of New York at Stony Brook, University of San Francisco, Texas A. & M. University, Colorado State University, and at NASA's Ames Research Center in Mountain View, Calif., and at JSC.

Following the December 15 Kosmos 782 payload thumpdown, Soviet Deputy Health Minister Avetik Burnazyan in a *Pravda* article said, "The experiments will promote further consolidation of international cooperation and make a substantial contribution to improving the system insuring prolonged manned space flights."

In addition to the NASA-developed life sciences experiments, US scientists are conducting seven tissue investigations on materials supplied by the USSR from their animal experiments.

"Preparation of the materials by Soviet scientists preceding space flight was excellent," Chambers noted.

The Kosmos spacecraft carrying Soviet, Romanian, Hungarian, Polish, French, Czechoslovak and American experiments was launched November 25 and recovered December 15. The mission marked the first time that US experiments had been flown aboard a Soviet spacecraft.

The four American experiments were designed to study the effects of weightlessness on plant tumor growth, carrot cells and fish eggs, and to measure the impact of radiation particles on plastic detectors. The latter data should be useful in evaluating the potential radiation hazards on long-duration manned flights. The fish egg experiment was managed by Dr. William H. Scheld of the JSC Health Services Division Biology Branch.

Soviet experiments involve similar investigations on rats and fruit flies, with tissue specimens being provided to American investigators after the mission.

## Three at JSC To Receive AIAA Awards

The American Institute of Aeronautics and Astronautics January 28 will confer honors on three JSC people at the AIAA annual meeting and technical display in Washington, D.C.

JSC Deputy Director Sigurd A. Sjoberg will be named an AIAA Fellow, Space Shuttle Payload Integration and Development Program Manager Glynn S. Lunney will receive the Institute's Louis W. Hill Space Transportation Award, and acting Director of Life Sciences Dr. Lawrence W. Dietlein will receive the John Jeffries Award.

AIAA chooses Fellows from among "persons of distinction who have made notable and valuable contributions to the arts, sciences or technology of aeronautics or astronautics."

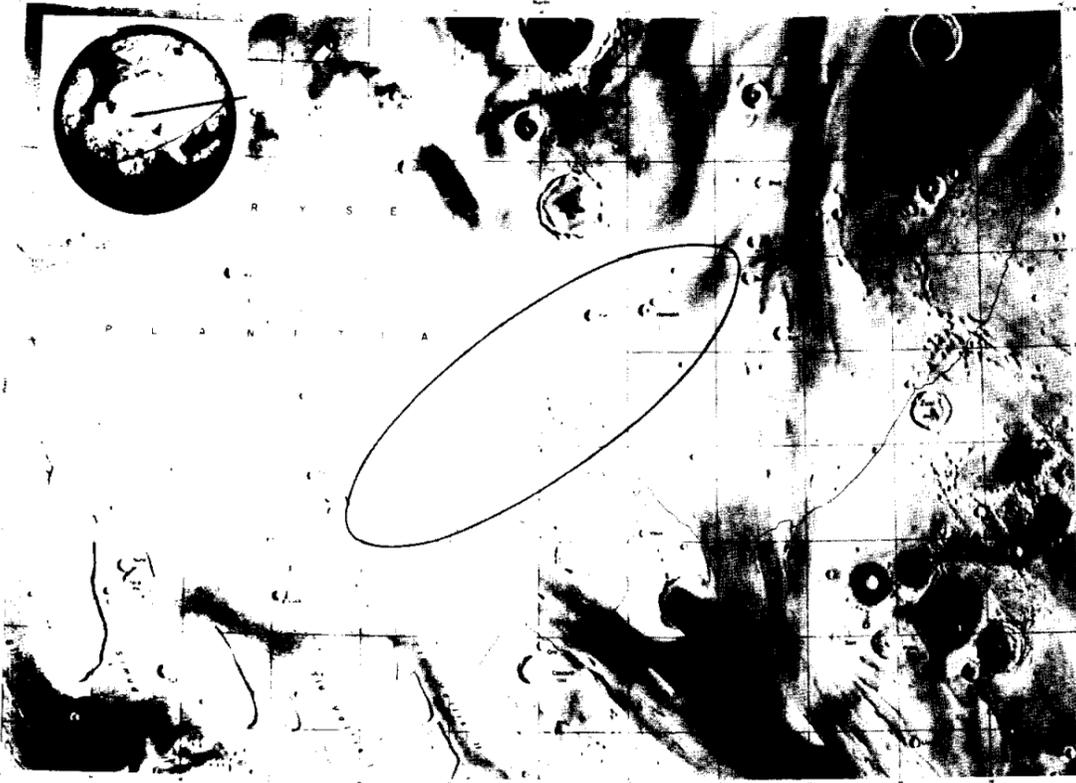
The Hill Award cites Lunney "for his pioneering efforts in manned space flights. His outstanding technical ability and management expertise have contributed significantly to the success of every US manned space flight program." The award consists of a certificate of appreciation and a \$5000 honorarium.

Dietlein, in receiving the Jeffries Award, is cited "for his most significant contributions to space medicine in Skylab by assuring the quantification of physiological changes/adaptation caused by weightlessness." Dietlein's award is a certificate of appreciation and a \$500 honorarium.

## FRC Renamed For Dr. Dryden

FRC last week was designated the Hugh L. Dryden Research Center in honor of NASA Deputy Administrator Dr. Hugh L. Dryden who died of cancer December 2, 1965. Dryden had been deputy administrator since NASA was formed in 1958, and was Director of NACA prior to the changeover.

*Apollo Expeditions to the Moon* is published by the NASA Scientific and Technical Information Office. It is available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. The price is \$8.90.



MARTIAN RUNWAY — Landing site for Viking 1's Lander next July is within the ellipse shown on this Mars topographic chart. Centered at 19.5° N Lat by 34° W Long, the target ellipse in the Chryse region of Mars lies at the mouth of a 5000-ft deep canyon and measures 80x300 km.

## Two ASTP Experiments May Help In Treating Blood Clotting, Leukemia

Two electrophoresis experiments carried aboard last summer's Apollo-Soyuz Test Project mission may give medical science an assist in treating blood clot conditions, such as phlebitis, and in the treatment of leukemia.

Human kidney cells which produce an enzyme effective in removing blood clots from veins and arteries can be separated from non-producing cells in space.

The same process on the ground has been unsuccessful in separating the cells. About five per cent of the kidney cells produce the enzyme, called urokinase, which bears major potential application for future treatment of people with blood clot conditions such as phlebitis.

An experiment on the Apollo-Soyuz mission last July was designed to isolate pure samples of the producing cells so that the samples, after return to Earth, could be used as starters for cultures of the cells.

The cells were separated in space using a process called electrophoresis. In this process the cells in solution are inserted into one end of a tube full of water. An electric current supplied through electrodes at each end of the tube creates an electric field. Because the producing cells move at slightly different speeds in the electric field than non-producing cells they tend to separate from the non-producing cells as they move toward the opposite end of the tube.

The process is unsuccessful on the ground because the effects of gravity cause thermal convection currents in the solution and the cells sink toward the bottom of the tube because they are denser than the water solutions that can be used for separation. In weightless space flight the process is unaffected by these forces.

In the Apollo Soyuz experiment the separated cells were frozen and returned to the ground for use as starters in the culturing process. The objective of the experiment was successfully achieved and the cultures of the ASTP samples produced six to seven times more urokinase than the original sample. The success was reported by Grant Barlow of Abbott Laboratories, Chicago, at a recent meeting on the experiment results at NASA's Marshall Space Flight Center, Huntsville, Ala. Dr. Robert Allen of the Marshall Center is the principal investigator for the experiment.

Another electrophoresis experiment has led to an application that may make it easier to perform transfusions of a certain type of white blood cells in the treatment of leukemia.

The cells, called granulocytes, combat infections in humans by attacking and eating invading bacteria. The transfusion of the cells to a patient is used to maintain resistance to infection in cases where the granulocytes are not produced.

Donors of the cells must be close relatives of the patient and the timing of transfusions is important because the lifetimes of the granulocytes in the patient's blood are limited.

Dr. Carel J. Van Oss of the State University of New York at Buffalo has found that the preservative medium developed for the ASTP mission when used to freeze granulocytes may improve their survivability. This would make it possible to build up a stock of frozen cells contributed by donors at their convenience, so that the transfusions would be available when and as the patient needed them. This would reduce granulocyte transfusion from a complicated operation to a routine procedure that could be managed for optimum control over the patient's condition.

The freezing medium that may make this possible probably would have been developed in time without being part of a space experiment. However, the space program made it available sooner.

The State University of New York at Buffalo has applied for a National Institutes of Health grant for a clinical assessment of the new technique's benefits.

## CTS Launch Delayed By Guidance Glitch

The world's most powerful communications satellite was rescheduled for launch today after a guidance system fix on the launch vehicle at NASA Kennedy Space Center. The satellite was to have been launched Tuesday when the guidance problem cropped up.

The launch culminates a five-year effort of international cooperation between NASA and Canada's Department of Communications.

The Communications Technology Satellite (CTS) will be used in an experimental program to pioneer new methods of providing communication services.

Such satellite systems provide the capacity for satisfying many human needs throughout the world, and their continued development can result in substantial benefits to mankind.

The CTS will extend present ability to meet those needs by incorporating new technology that will make possible television reception and two-way voice communication with the use of small, user-operated ground terminals.

The CTS is the second satellite designed to transmit high-quality color television to small, simple ground stations. The other is the Applications Technology Satellite-6 (ATS-6), launched in May 1974 and now being used by the government of India to relay educational programs to thousands of isolated villages before resuming broadcasts to the United States. ATS-6 achieves its high power by use of a 9-meter (30-foot) reflector antenna;



CONDUCTS WORKSHOP — Dr. James J. Finley, California State College professor of administration, Monday conducted a workshop on the Congressional Budget and Impoundment Act of 1974 in the Bldg 30 Auditorium for employees enrolled in the JSC Professional Development Program and for others interested in the budgetary process.

CTS, by means of a very high-power (200 watts) transmitter. ATS-6's effective radiated power is 53 DBW (decibel watt); CTS's, 59 DBW.

When launched into a synchronous orbit CTS will be stationed over the equator at an altitude of about 36,000 kilometers (22,300 miles) at 116 degrees west longitude, just west of South America.

This position will permit a wide variety of unique experiments to be performed, both in the United States and Canada, that will demonstrate and encourage new satellite applications.

The United States and Canada will share equally in experiment time during the satellite's expected two-year life.

The CTS will operate in a new frequency band allocated for broadcast satellites. The transmitting power levels are 10 to 20 times higher than those of today's commercial communications satellites.

## Credit Union

(Continued from page 1)

meeting. At least 40 days prior to the annual meeting the president will appoint a nominating committee to nominate at least one member for each vacant position. These nominations shall be posted in the Credit Union at least 20 days prior to the annual meeting.

Nominations for vacancies may also be made by petition signed by at least one percent of the members. Such nomination must be accompanied by a certificate from the nominee or nominees stating that they are agreeable to nomination and will serve if elected to the office. These nominations must be filed with Tom Krenek, Secretary of the Board, at least 15 days prior to the annual meeting.

Voting will start four days prior to the annual meeting in the Credit Union. Voting will also take place at the JSC auditorium the night of the annual meeting. Voting will cease when the annual meeting is called to order. All elections will be determined by plurality vote and the results of the election will be announced at the annual meeting. Any questions on this new procedure should be directed to the Supervisory Committee of the Credit Union.



OLD GREENBACK IS AN ORNARY CUSS...  
RIDE 'EM 'TILL THAR AIN'T NO FUSS!!!

TROT YOUR SUGGESTIONS ON DOWN TO:  
BH4 - COST REDUCTION OFFICE

## 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.

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# EAA ATTRACTIONS

## DISCOUNT PRICES FOR JSC EMPLOYEES

From time to time, EAA makes known to JSC employees "cost savings" information. Such information — whether it be a movie ticket discount, social function, car buying or a foreign trip — is designed to give employees the benefit of a group price such as is commonly offered by certain agencies to many large companies. The EAA Executive Board and its official committees *do not* in any way exclusively subscribe to or recommend any single agency, but rather pass the information on to employees when it may mean cost savings, leaving it up to employees to decide whether a benefit can be derived. The EAA Executive Board makes every effort to check these

various agencies for validity and credibility prior to presentation to employees for consideration. Since the individual employee makes his own decision to whether or not to participate, and negotiates his own transactions, EAA does not assume any responsibility. If anyone believes that he can get a better price elsewhere, he is encouraged to do so. In fact, it is strongly recommended that comparisons be made with other products and services to the employee's satisfaction *before* making a decision.

## JSC PHOTO CLUB

Interested in photography? Join the JSC Photo Club.

The club normally meets twice a month, on the first and third Thursdays at the Gilruth Recreation Center. First Thursday is a program

night and the third Thursday is a print/slide presentation night and discussion of darkroom and processing problems.

The February 5 meeting will be a studio portrait demonstration. Other topics for 1975 meetings include photo silk screening, JSC Photo Lab, solarization techniques, photography for astronomy, miniature cameras, large-format cameras and closeup photography.

## JSC TENNIS CLUB THANKSGIVING TOURNEY

The following are standings in the November 29-30 JSC Tennis Club Thanksgiving Tournament listed in each category in first, second and consolation places.

Advanced men's singles: Jim Blumentritt (4-6, 6-3, 6-4), Ken Westerfield, Tom Weber. Advanced women's singles: Evelyn Carter (6-2, 4-6, 6-4), Betty Weber, Amy Young.

Advanced mixed doubles: Gid and Betty Weber (6-2, 6-1), Jim and Tracie Blumentritt, Ken Westerfield and Sheryl Nixon. Intermediate men's singles: Dave Scheffman (1-6, 7-6, 6-1), John Manning, Ken Thrasher.

Intermediate women's singles: LaMoine Humphreys (6-3, 4-6, 6-2), Connie Stavino, Sandra Schmidt. Intermediate mixed doubles: Terry Sherwin and John Lottinville (4-6, 7-6, 6-3), Rose and George Proch, Jeanne Weber and Kevin Westerfield.

## HEALTH CLUB DISCOUNT

The Clear Lake Health and Fitness Center for men and women is offering JSC EAA members a discount membership rate until February 15. The regularly annual rate is discounted 28 percent. Additional discounts are available for family members. Members are entitled to full facility privileges, including figure and physique analysis, and

guest-member privileges in more than 800 associated physical fitness centers. The center is at 16504 Sealark in Clear Lake City, phone 488-8250.

## TICKETS AVAILABLE

On sale in Bldg 11 Exchange Store 10 am to 2 pm, no refunds: Windmill Dinner Theater \$14/couple; Dean Goss Dinner Theater \$16/couple; Sea Arama adults \$3.25, children \$2.25; free Disney Magic Kingdom cards and Lion Country Safari cards.

## HOUSTON LIVESTOCK SHOW AND RODEO

The EAA has a block of 200 tickets for each of four Houston Livestock Show and Rodeo in late February and early March. Performances and star attractions are: Feb. 27 evening, Freddy Fender and Tanya Tucker; Feb. 29 matinee, Olivia Newton-John; Mar. 2 evening, Charlie Pride; Mar. 7 evening, Mac Davis. Tickets are front mezzanine (orange seats) at \$5.50 each on sale in Bldg 11 Exchange Store.

## FIRE SAFETY SALE RESULTS

The EAA-promoted sale of fire detectors and extinguishers was quite a successful, with sales of 58 BRK detectors, 51 2.6-lb extinguishers and 42 6-lb extinguishers. A direct-order list of safety items for continuing sale is now being prepared and should be published in early February.

## TICKETS AVAILABLE

On sale in Bldg 11 Exchange Store 10 am to 2 pm, no refunds: Dennis Cole in *All of the Girls Came Out to Play*, Windmill Dinner Theater, \$14/couple, good Wed, Thurs, Sun until Jan 26; Dean Goss Dinner Theater \$16/couple; Sea Arama Adults \$3.25, children \$2.25; free Disney Magic Kingdom cards and Lion Country Safari

cards. EAA Country-Western dance, Feb. 21, tickets on sale Jan. 19 \$7.50/person at Bldg 11 Exchange Store. Sales end Feb. 13.

Aaaah, haaaa!!!

Polish your boots, wash your Levis and shine your silver belt buckle for the Second Annual EAA Country Western Dance Saturday February 21 at the Gilruth Recreation Center, 7 pm to 1 am. Music by the Music Masters from Bryan. Those who were at last year's dance will remember that this group plays a good mixture of danceable music — slow and fast. Western beverages from 7 pm to 1 am, a cold buffet at 8, and the band will play from 8:30 pm to 1 am. Bldg 11 ticket sales end Feb. 13.

## BLOOD DRIVE

The first JSC Blood Bank drive of 1976 is scheduled January 22 from 8 am to 2 pm at the Gilruth Recreation Center. Bring someone with you and get the year off to a good start. Call Helon Crawford at 3809 or Bob Jones at 2921 to reserve a needle.

## GOLF ASSOCIATION SEEKS MEMBERS

The JSC Golf Association is now accepting membership applications for the 1976 season. Members participate in flighted competition for merchandise, trophies and fun, and play a variety of golf courses. The first of 11 tournaments will be played February 16.

Membership costs are \$28.50, and include tournament prize fees and trophies.

With a January 30 deadline, membership applications have been mailed to December questionnaire respondents. Federal and contractor employees interested in joining JSCGA should call Milt Hefflin at 2491 or Jerry Shinkle at 2588.

## Bendix Selected As STDN Operator

NASA has selected Bendix Field Engineering Corp., Columbia, Md., for award of a contract to operate and maintain portions of the agency's worldwide Spaceflight Tracking and Data Network.

The two-year, cost-plus-award-fee contract is approximately \$104 million. The contract contains a provision for the negotiation of up to three additional one-year extensions.

The worldwide NASA Spaceflight Tracking and Data Network (STDN) is operated to meet the tracking and data acquisition needs

of NASA's Earth orbital space programs, both manned and unmanned.

Contractor services will include technical support and operation and maintenance of the Laser Tracking Subnet, the Goddard Space Flight Center Network Operations Control Center and the following STDN stations: USNS Vanguard; Bermuda; Goldstone, Calif.; Guam; Fairbanks, Alaska; Kokee Park, Hawaii; Hybrid (ATS Mobile Station) at Madrid, Spain; Merritt Island, Fla.; Quito, Ecuador; Rosman, N.C.; Ascension Island; and the Network Test and Training Facility at the Goddard Center.

The contractor will provide technical support from time to time for the following STDN facilities which are operated and maintained by other organizations: Santiago, Chile; Madrid, Spain; Orroral Valley, Australia; and Winkfield, England.

The Magnetic Tape Certification Facility located at Goddard Center will be operated by the contractor. It erases, cleans, checks and recertifies used magnetic tapes.

The Laser Tracking Subnet will consist of a fixed station at the Goddard Center and eight mobile stations to be placed at various sites around the world for support of the San Andreas Fault Experiment (SAFE), the Laser Geodynamic Satellite Network and the Geodynamic Experimental Ocean Satellite Program.

The contractor will also operate NASCOM facilities located at Goddard. NASCOM is the communications system linking all network stations and it includes teletype, voice and data circuits.

The contractor will also operate NASCOM facilities located at Goddard. NASCOM is the communications system linking all network stations and it includes teletype, voice and data circuits.

The contract will be supervised by the Goddard Space Flight Center, Greenbelt, Md. The only other firm submitting a proposal was Raytheon Service Co., Burlington, Mass.

## Exchange Council Seeks Applicants

The 1976 call for Scholarship Program applicants has been issued by the NASA Exchange Council-JSC.

Two scholarships, each with a maximum value of \$3000, will be awarded this year. The fund was established in 1967 to provide financial assistance to unmarried dependents of JSC civil service employees who have had at least two years' employment at JSC as of January 1, 1976.

Students who are currently in college, as well as high school students who will graduate in 1976, are eligible to apply. High school students are required to have a grade average of 3.5 on a 5.0 scale or 2.5 on a 4.0 scale. College students are asked to furnish transcripts showing they are in good scholastic standing.

While financial need is considered in the selection of scholarship winners, scholastic achievement and school or community involvement will also be taken into consideration. Those students who are selected for the scholarships may choose any accredited college and any course of study leading to a recognized degree.

As JSC Announcement has been issued recently giving details on applying for the scholarships. Application forms may be obtained from Lois Ransdell, Building 1, extension 2708.

## 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.

### WANTED

2nd-hand ladies ski clothes size 12: pants, parka, hat, thermal undies, etc. Judie, 488-1244.

Carpooler from vicin Belfort/Howard & Gulf Fwy 8-4:30. Bill, X5437.

27-in American-made man's 10-spd bike, must be good cond, priced abt \$65. Brenton, 483-2021.

12-ft flatbottom boat. Amsbury, 474-2919 or 538-1017.

Little League umpires; ump school starts Feb 16. Webb, 482-3500 or Morris, 482-7775 after 5:30.

### PROPERTY & RENTALS

1.75-acre lot near Sunset Drive, Friendswood w/50 young trees, the in location for your mini-ranch, \$1150. Scott, 482-3011.

2-acre lot in Friendswood ElDorado subdiv, \$7500. Zupp, 482-7156.

### HOUSEHOLD ARTICLES

20-gal long aquarium W/54-in door cabinet, \$60; 10-gal slim-jim, less stand, \$25. 554-7052.

60-in Spanish-style coffee table w/two side doors, \$65; walnut coffee table w/inlays, \$45. 554-7052.

Antique marble-top washstand, \$185; washstand svc set, \$90; 42-in oak mirrored buffet, \$285; oak rking chair, \$110; birdseye maple rking chair, \$75. 554-7052.

Wall-mounted 73-in steer horns, leather-wrapped center, \$60. 554-7052.

Model K-111 Hammond organ, \$600. McPhillips, 333-792 or 333-4659.

Playpen and mattress, \$10. Barbara, 946-4311.

GE 23-in B&W TV, 4 yrs old, pic tube failing, \$35 or best offer. Hehn,

481-0069 after 6.

### BOATS

65 Columbia 24 sailboat, 1B engine. 488-4079 or 474-3319.

15-ft Super Skeeter bass boat, 33-hp Johnson, Lowrance Lo-K-Tor, super motoguide, 2 batts, 2 6-gal tanks, rod racks, encl strge, Dilly trailer, best over \$900. 482-6777.

Info on prices, market value and condition of used Lido 14 sailboats for sale by owners. Hoover, 334-2392.

### VEHICLES

71 Honda CL70 street bike, \$175. White, 554-2916 LgCty.

Credit Union repos: 74 VW, 70 Pontiac Grand Prix, 74 Harley Davidson mtrcycle. Shown by appt only Jan 19-21. Bids close 5:30 Jan 21. Georgia Bennett, 488-7070.

74 Kawasaki 125 dirt bike, never raced, xint cond, \$400. 472-5243 after 5, wknds.

Boy's 20-in 3-spd Schwinn, \$25. Lapko, 946-4311.

16-ft travel trailer, slps 6, compl kitch x/sep rstrm, 40-gal water tank, AC/DC, \$1500 or rsnble offer. 488-2387.

71 Volvo 164, auto, pwr, AM/FM stereo, xint cond, \$2950. Sampsel, 471-0172.

75 Honda 550/4 K1, like new, 3800 miles, Windjammer II, airhorns, sfty bars, road pegs, lug rack, sliding leaner bar and pad, 10-in hi hndl bars, setbacks, lwrgn blks, CB ant, manual, always garaged, adult rider, consider trade for

73 Norton 750, no leaks, never left outside. 334-1701 or 334-1975.

Men's Schwinn Continental 10-spd, xint cond, xtras, \$95. 554-7025.

PU or smaller mtrcycle as partial. \$1800. Underhill, 482-3100.

### MISCELLANEOUS

14.5-lb plastic bowling ball, \$7.50. Cundieff, 334-2305.

Two memshps in Hobby-based flying club; fly Cessna 150, 172, 177 and Cherokee 140. Nieder, Ext 2276 or Ward, Ext 6104.

Rowing maching exerciser w/bike pedals, elec massage board, cost \$65, sell \$45. 488-0010 after 5.

Sears elec guitar amp, 5-watts, perf cond, xint for beginner, \$15. 482-1949.

4 F70x14 Goodyear Polyglass white strip tires, 5000 miles, like new, \$200. 483-4771.

Olivetti Programma 101 desktop computer, needs work, \$100. 554-7098.

55-in van bench seats w/legs, \$35. Phillips, 643-4002.

Ampex 95 stereo/rcdr, plays 6 cassettes without chng, sep spkrs, 20 asstd cassettes, all for \$90. 482-3100 after 5.

Silvertone 21-in color TV, works good, \$75. 554-7098.

Stereo spkrs: 15-in woofers & horn tweeters in JBL enclosures, \$100 for both. 554-7098.

Bell & Howell lowlite XL672 movie camera, rng fndr, pwr zoom, batt pwr'd, still in box, \$125. 482-3100 after 5.

Falcon gas grill, needs support post. Judie Boin, 488-1244.

### FOUND

Lady's wristwatch, Bldg 30 prking lot, Jan 6, 11:30 am. Dave Pruett, Ext 5551.

### LOST

Sterling silver grandmother's pin, with three children's heads inscribed: Dean, Leila, Rick. D. Stanley, 483-4531.



**SOMEONE'S IN THE KITCHEN** — Food technicians in the JSC food laboratory in Bldg. 37, left, package a batch of meals to be evaluated in field tests by elderly people who either live alone or who have trouble preparing nutritious balanced meals. At right, an

elderly volunteer in Central Texas tests by taste one of the prepared meal packages. Using many of the techniques that were used in preparing and packaging Apollo and Skylab space food, the project has a goal of developing nutritious, shelf-stable, easily deliverable

meals that elderly people living alone or who have physical disabilities can prepare with minimum effort.

## Space Food Techniques Used In Pilot Program for Elderly

While three square meals a day are taken for granted by most Americans, getting even one balanced meal each day is a problem for some of the nation's elderly.

Food technology and packaging techniques developed at JSC to feed Apollo and Skylab crews during space flight are being applied in a pilot program to help provide balanced meals to elderly who live alone. Physicians, nutritionists and biomedical engineers here are working together to design and develop a meal system to supplement the existing National Nutrition Programs for the Elderly.

The effort is part of the agency's Technology Utilization program in which space-developed technology is applied in the solution of earth-bound problems.

Project Engineer Gary R.

Primeaux reported that surveys have shown that many elderly Americans do not receive adequate nutrition. He cites as contributing factors lack of single-serving products, limited mobility, loss of skills needed to prepare balanced meals, limited finances and often a sense of loneliness or rejection that reduces the incentive to cook and eat nutritious meals alone.

Called Meal Systems for the Elderly, Primeaux says: "Its goal is to develop nutritious, shelf-stable, convenient and easily deliverable meals for the elderly."

While several programs for home-delivered hot lunches for the elderly are being tried in some cities, there is usually no weekend service and spoilage risk is high. The NASA team developing the meal system is striving to come up with a shelf-stable, multi-meal package

that can be distributed by several methods — even parcel post — to senior citizens who live beyond the range of hot-meal delivery or to those people in cities where weekend meals are not provided.

The team is working toward a meal system that can be opened, cooked, eaten and cleaned up by elderly people living alone. A field demonstration, starting early this year, in which selected elderly Texans will prepare and eat developmental meals will give the team an evaluation of meal design and delivery methods.

The basic meal will consist of an entree, two side dishes, dessert and beverage, with a 21-day menu cycle to provide variety from a list of 10 entrees, 20 side dishes, 10 desserts and five beverages. Each meal will provide at least one-third of the daily dietary allowance for elderly persons.

The design, development, field demonstration and evaluation phases of the program are expected to be completed by late 1976, according to Primeaux.

In addition to the JSC team developing the meal system technology, the University of Texas Lyndon B. Johnson School of Public Affairs, Austin, will assist in demonstrations and distribute meals. The Texas Research Institute of Mental Sciences, Houston, has surveyed attitudes, food preferences and has run taste tests among potential users.

The program is expected to cost \$240,000, of which NASA will fund \$125,000; Johnson School of Public Affairs, \$90,000; Texas Research Institute of Mental Sciences, \$8,000; and United Action for the Elderly, Inc. \$17,000.

Technology, Inc. and Martin Marietta Corp. are contractors in the development program.

### 1976 Blood Bank Drive Schedule

Name:	Call for Appt:	Date of Drive	Place of Drive
JSC	3809/Helon Crawford 2921/Bob Jones	1/22/76 5/20/76 9/23/76	JSC, Bldg. 207
Aero-Ford Corporation	488-1270/Donna Tutt	4/13/76 8/17/76 12/7/76	Ford Bldg. 1
Rockwell International	333-2030, X125 Joy Edwards	2/17/76 6/17/76 10/21/76	JSC, Bldg. 207
General Electric	332-4511, X304 Linda Pratt	2/19/76 5/27/76 10/14/76	GE Bldg. 5
Lockheed	488-0080, X250 Harriett James	3/25/76 6/24/76 9/16/76 12/9/76	JSC, Bldg. 207
McDonnell Douglas	488-5660, X200 Betty Steinkuehler	1/27/76 5/4/76 10/5/76	JSC, Bldg. 207

## Betty Feddersen Picked December Secretary

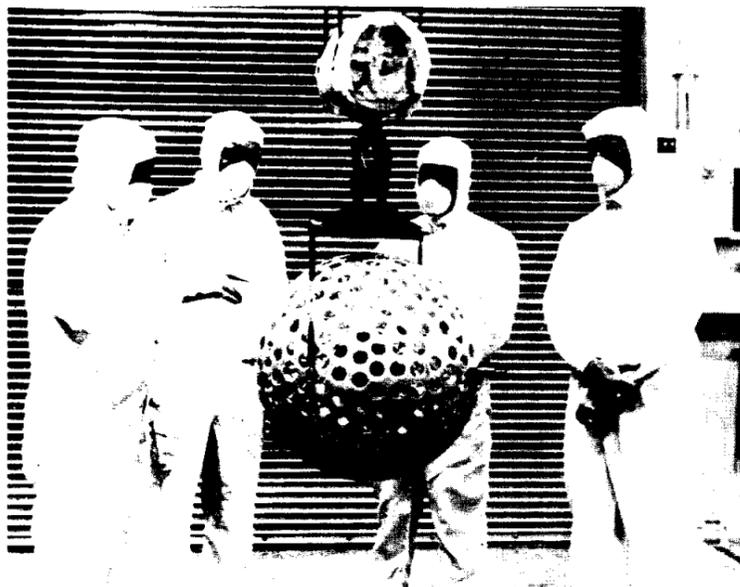
Betty Sue Feddersen, secretary to Space Shuttle Program Management Integration manager Harold E. Gartrell, has been named JSC Outstanding Secretary for December.

In the nomination for the award, Feddersen was cited for "her ability to recognize individual as well as office needs and for maintaining the finest possible relations with both JSC and industry people."

"She is also frequently called upon to participate in particularly sensitive special assignments, such as source selection activities involving developing RFPs, supporting Source Evaluation Boards, and preparing the official source evaluation and selection documentation. She performs all these sensitive and critical tasks with care, skill and



considerable tact... Through many periods of heavy workloads requiring extra work and long hours, she has always been recognized as extraordinary in the amount and quality of effort and results."



**COVEN OF WARLOCKS?** — No, just four NASA and Bendix program people in cleanroom garb inspecting the Laser Geodynamic Satellite (LAGEOS) following installation of its 426 retroreflectors. Scheduled for launch in April, LAGEOS will be laser tracked for accurate measurements of Earth crustal and rotational motions. NASA Marshall Space Flight Center manages the project