

Orbiter Columbia lands at Kelly AFB, San Antonio, on its ferry flight from California to the Cape.

ROUNDUP

Lyndon B. Johnson
Space Center

NASA

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STS Update: System tests at KSC; crowds at Kelly; booster design advances

At Kennedy Space Center, 3 shifts of 200 employees each are working 7 days a week on systems testing of the orbiter Columbia. The 1st powering up took place Wednesday, March 28. Among the tests were energizing of the cooling system, command decoder, and caution warning system.

Thursday, April 5 they are scheduled to have started 6 weeks of integrated systems testing. The Columbia should be ready to move into the Vehicle Assembly Building in 20 weeks.

"Virtually all the temporary tiles are off," said a KSC spokesman. He said Cape employees are now installing the remaining permanent tiles and expect to be finished with the job in July.

When Columbia was at Kelly AFB on its way to the Cape last month, there were over 30,000 cars in the base parking lot before noon. Over 200,000 people came to see the orbiter on its stopover in San Antonio.

Ground vibration testing has ended at Marshall Space Flight Center. The series of tests of the orbiter (Enterprise), External Tank, and Solid Rocket Boosters was successful and "confirmed NASA's confidence in its ability to perform as designed," Marshall officials say.

These tests were conducted with the Enterprise "soft mounted" in the test stand so it could be free to move in any direction when it reacted to excitation forces. Important changes to the Shuttle's structural design evolved as a result of the long months of test operations. For example, engineers have added strengthening brackets to the forward portion of the boosters where guidance gyro packages are positioned. They also have new insights into the reaction of attach points between the stand and the boosters.

Thrusting power of the Space Shuttle may be increased for polar orbit missions by attaching strap-on rocket motors to the rear section of the SRBs. The smaller strap-on rockets are ex-

pected to be about 1/4 the length of the boosters which are about 150 feet long. To save costs, the strap-ons will contain no guidance systems, and will not be recovered.

The Payload Specialist crew for the 2nd Spacelab mission will begin a training tour in April, visiting most of the Principal Investigators for the flight experiments on the 1982 mission (see related story Page 4).

The 3 men and 1 woman will visit 6 sites in the U.S. and 3 in Canada. The crew members are: Dr. Loren W. Acton, a research scientist at the Lockheed Palo Alto Research Lab; Dianne K. Prinz and JohnDavid F. Bartoe, research physicists at the U.S. Naval Research Lab in Washington; and George W. Simon chief of the solar research branch at the Air Force Geophysics Lab at Sunspot, N.M.

Two of the PSs will actually fly aboard Spacelab 2; the other 2 will operate ground-based equipment and assist the pair in orbit.



WORLD OF TOMORROW contest winner Brent R. Eralewine shakes hands with Deke Slayton at Kelly AFB. The contest was sponsored by NASA for the Cub Scouts. Slayton also was interviewed that day by Tina Aguilar, 9, for KENS-TV, San Antonio.

Experimenting at zero-g

It's 7:45 a.m. The wind at Ellington is blowing with its usual force, and there's the sound of T-38's and Air Guard aircraft take-offs and landings loud in the background.

At the NASA hangar the parking lot is full. Inside the building technicians, photographers, scientists, and test subjects are heading down the hall to the Zero-G Office. Don Griggs, already in his flight suit, is chewing on a cigar and going over details for today's flight with Co-op Larry Neu. Larry Magers is briefing new test subjects on flight safety: ejection and donning parachutes. Coffee and space motion sickness tablets are passed around.

Potential spacecraft power systems, life support artifacts for Shuttle crew cabins, or a boxed contraption of cameras and graphs that will fly on a Spacelab mission are in the cabin of the KC-135A waiting outside.

Soon the 20-30 passengers troupe out to the ramp and get onboard the KC-135. They take off, and as soon as seat belts can be unfastened, activity level on the craft gets intense and concentrated.

Electrodes are attached to data systems. Subjects are strapped to chairs and blindfolded. Cameras are ready, and technicians are alert.

Lights flash. "Here's Number One," someone calls out. The plane surges over a hump and everyone onboard is weightless. The jet engines get quiet. Flight boots aim towards the ceiling with legs following, and hair and wires float in front of faces. Technicians kick off from one wall and float to the ceiling on the other side of the cabin.

Cameras are rolling, data banks tapping, and each worker is using each second to its full advantage for his task. And all the while Griggs is floating from base to base overseeing.

"That's 20 seconds," someone calls out and all hands reach for a stable place to grasp. "30," calls the voice, and each body, wire, and piece of equipment plummets to the floor, hard-pressed at double gravity as the plane ascends for the next parabola.

All in a day's work.

NASA has run tests using flight



IO VOLCANO, 1 of at least 4 on the Jovian moon, is visible on the limb of the satellite. This is the 1st such activity ever observed on another celestial body, taken by Voyager.

Continued on Page 4

Bulletin Board

Women, You Can!

A panel of women will discuss changing roles in the work force in a "Space for Women" program at Gilruth Center Tuesday, April 24 at 1:30. Sally Ride, astrophysicist, Shannon Lucid, biochemist, and Anngienetta Johnson, engineer, will discuss nontraditional roles for women; the more traditional role will be described by Estella Gillette, secretary; and the transition from one role to the other will be presented by Marilyn Bockting, Manager of the Program Administrative Office.

The program will focus on expanded personal and career options now available to women. It will introduce the week of activities scheduled for Federal Women's Week, May 1 - 4.

The panel members will describe their education and employment backgrounds and work they are currently doing. Ride and Lucid will talk about training they're receiving as astronaut candidates.

360,000 Employees Could Have High Blood Pressure

Almost 100 Americans die every day as a result of untreated high blood pressure and the illnesses it causes—heart disease, kidney disease, and stroke. Current estimates are that as many as 15% of the U.S. working population may be at "risk" due to elevated blood pressure. This translates into more than 360,000 Federal civilian employees. To learn more about high blood pressure—how to detect and treat this serious health threat, plan to attend a health education program presented by the JSC Clinic and the American Heart Association on April 18, at 10 a.m. and again at 1 p.m. in the Building 30 Auditorium. A physician will be present to answer your questions.

Microcomputer Presentation—First for the Club

The JSC Computer Hobbyist Club holds regular meetings on the 1st Thursday and 3rd Monday of each month to promote interest in personal and hobby computers and to share information about computer products and programming. The club will examine a Texas Instrument 16-bit microcomputer at their next meeting, April 16. The system is complete on a single printed circuit board. This is the 1st of the 16-bit microcomputers to be demonstrated for our club. The next meeting will be Monday, April 16, 5 - 7 p.m., in Room 204 of the Gilruth Center.

High Utility Bills? Project S.E.A.R.C.H.

The Society of Energy Alternatives Research is a newly forming organization dedicated to the individual's energy self-efficiency. We as a group have put men on the Moon and have visited the stars. Let's as a group pool our ideas and solve our energy needs—at home with the sun, wind, steam, etc. Those interested call: Rolland Walker 332-3875 after 4:30.

The Club is Ready When the Courts Are

Construction is underway for 2 new



Saturday Afternoon Fever?



SUGGESTION AND TECH BRIEF AWARDS went to the following employees on March 16: (l to r) 1st row: Phyllis Morton, Virginia Nester, Doris Kreske; 2nd row: Jose Reyes, Rees Underhill; 3rd row: Robert Shuler, Graydon Owens, Robert Kelson, Andrew Sullivan, Arthur Richardson; 4th row: William Bland (Chair), Joe Pouzar, Robert Richmond, Gerald Harding, James Ellis. Owens, Kelson, Pouzar, and Richmond received Tech Brief Awards, the rest were suggestions.

tennis courts at Gilruth Center. When completed sometime this summer, the Center will have 5 lighted courts available for play. The 3 existing courts are being resurfaced and the lighting repositioned for better playing visibility. Tom Murtagh, JSC Tennis Club President, says that as soon as surfacing is completed, the existing courts will be reopened for play.

The JSCTC is now accepting membership which is open to all JSC/Contractor employees and their families. Membership fee is only \$2 per year, which entitles you to enter 7 club-sponsored tournaments. For more information, contact Lin-

da Horwitz (3035) or Tom Murtagh (3217).

Of Silver Coins, Spanish Ships and Bullion

"Treasure, People, Ships, and Dreams," a Texas Antiquities Committee exhibit, will be at the Houston Museum of Natural Science through May 30. The exhibit, often called "The Texas Treasure," includes artifacts recovered from the remnants of sunken ships—cannon barrels, a crossbow, silver pesos, maps, drawings—providing a revealing view of 16th Century Spaniards who served as links between their mother country and the New World colonies.

She presents quality work and oversees like an expert

When Josephine Corey started her job as Branch Secretary for Crew Training and Procedures 17 months ago a classroom series for the STS-1 crew was already in progress. She set out immediately overseeing the secretarial workload, often having to work long hours. "It was never necessary to ask her to stay, she volunteered," said a Branch spokesman.

Training instructors produce large quantities of manuals, materials, and documentation. Branch managers say Corey's "skills and efforts are outstanding both in an exceptionally large typing output and in her presentation of material that approaches draftsman quality."

Corey has a talent for organizing. Upon the selection of a new Branch chief, she set up a series of discussion sessions with supervisors that ended up improving the efficiency of the Branch as a whole. When the office brought in Daconics word processing, Corey mastered the system then found ways to apply it to the office management "saving countless hours" within the Branch.

Jo Corey is dedicated and proud of her profession. She is smart and she likes to work hard. Her bosses nominated her,

and she was chosen Secretary of the Month for March 1979.



Jo Corey
Outstanding Secretary

Women's Week theme is 'Exploration'

City Controller Whitmire to give keynote speech, get tickets now

Houston City Controller Kathy Whitmire will discuss some of her experiences as the 1st woman elected to Houston city office when she presents the keynote speech for the Federal Women's Week program at Gilruth Center on Tuesday, May 1.

Deputy Director Sig Sjoberg will appear at the luncheon which will open the week of programs for men and women at JSC.

A limited number of tickets will be available for the 11:30 a.m. luncheon; however, there will be additional seating for the keynote speech, scheduled for 12:30.

The \$2.95 luncheon tickets are available from:

Marge Holmes	Bldg. 422	x-4183
Lettie Reed	Bldg. 4	x-2688
Helen Ragsdale	Bldg. 1	x-3885
Alotta Taylor	Bldg. 45	x-3734
Karen Clark	Bldg. 5	x-4891
Helen Montgomery	Bldg. 30	x-5447
Nancy Hutchins	Bldg. 8	x-3136.

Tickets will be issued on a first come, first served basis.

The FWP encourages NASA and contractor employees, their spouses, and members of the community to attend the week of activities.

Watch the next *Roundup* for the complete program.



MARCELLE MARCEAU
GOT UP TO SPEAK
CARRIED AWAY
BY WOMEN'S WEEK

JSC - MAY 1-4 GILRUTH RECREATION CENTER

What's cookin' in the JSC cafeteria

Week Of April 9 - 13

MONDAY: Cream of Chicken Soup; Beef Burgandy over Noodles; Fried Chicken; BBQ Sausage Link; Hamburger Steak (Special); Buttered Corn; Carrots; Green Beans. Standard Daily Items: Roast Beef; Baked Ham; Fried Chicken; Fried Fish; Chopped Sirloin. Selection of Salads, Sandwiches and Pies.

TUESDAY: Beef Noodle Soup; Baked Meatloaf; Liver w/Onions; BBQ Spare Ribs; Turkey & Dressing (Special); Spanish Rice; Broccoli; Buttered Squash.

WEDNESDAY: Clam Chowder; Broiled Fish; Tamales w/Chili; 8 oz T-Bone Steak; Spanish Macaroni (Special); Ranch Beans; Spinach; Beets; Parsley Potatoes.

THURSDAY: Navy Bean Soup; Beef Pot Roast; Shrimp Chop Suey; Pork Chops; Chicken Fried Steak (Special); Carrots; Cabbage; Green Beans;

FRIDAY: Seafood Gumbo; Broiled Flounder; Fried Shrimp; Baked Ham; Tuna & Noodle Casserole (Special); Corn; Turnip Greens; Stewed Tomatoes.

Week Of April 16 - 20

MONDAY: Chicken Noodle Soup; Weiners & Beans; Round Steak w/Hash browns; Meatballs & Spaghetti (Special); Okra & Tomatoes; Carrots; Whipped Potatoes. Standard Daily Items: Roast Beef; Baked Ham; Fried Chicken; Fried Fish; Chopped Sirloin. Selection of Salads, Sandwiches and Pies.

TUESDAY: Beef & Barley Soup; Beef Stew; Shrimp Creole; Fried Chicken (Special); Stewed Tomatoes; Mixed Vegetables; Broccoli.

WEDNESDAY: Mushroom Soup; 8 oz T-Bone Steak; Fried Perch; New England Dinner; Swiss Steak (Special); Italian Green Beans; Cabbage; Carrots.

THURSDAY: Cream of Chicken Soup; Turkey & Dressing; Enchiladas w/Chili; Weiners & Baked Beans; Stuffed Bell Pepper (Special); Zucchini Squash; English Peas; Rice.

FRIDAY: Seafood Gumbo; Baked Flounder; 1/4 Broiled Chicken w/Peach half; Salisbury Steak (Special); Cauliflower au gratin; Mixed Vegetables; Whipped Potatoes; Buttered Cabbage.

Dedicated Co-op

Mark Janney's assignment on his first Co-op tour at NASA was to develop a driver program for the maneuver display in the Single Systems Trainer.

He had to develop a working knowledge of the SST computer system, the orbital maneuvering system, the reaction control system, the onboard general purpose computer functions, and the SST simulation software.

His supervisors say Janney dedicated himself to the task and succeeded in "developing an operational program that completely satisfied the requirements."

Janney received the Co-op of the Month Award for March for this contribution to the Simulation Integration Section. He has returned now to school at the University of Arizona.

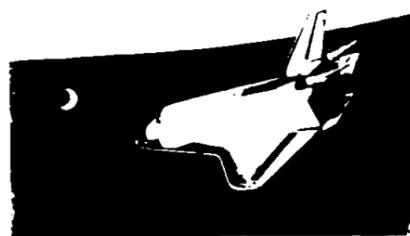
Roundup deadline is the 1st Wednesday after publication.

'We really have the interesting part of Space Shuttle operations'

(Editor's note: Dick Johnston, Director of Space and Life Sciences, recently addressed an AIAA membership-drive meeting—his topic: future activities for science and applications at JSC. Excerpts of his speech follow.)

At JSC the Science Program — life sciences, Earth resources, lunar and planetary sciences, and environmental sciences—are the people who will use the Shuttle in the next 10 years to pro-

Everyone who works on site, including contractor employees, should receive a copy of *Roundup* in the mail. Keep your distribution up to date by filling out a JSCF 2271. Under "all employee distribution" list the number in your section who are to receive *Roundup*, including contractor employees as well as civil servants. Any questions on this, call the *Roundup* editor at x-5111.



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duce useful and meaningful payloads.

We really have the interesting part of Space Shuttle operations.

The Life Sciences Experiment Program has a strong and bright future—a good budget, the Development Engineering and Operations contractor should be onboard in 2 - 3 months.

For the last several years, the life sciences team has been developing a plan to conduct medical and life sciences studies in the Space Shuttle. The goal of this new approach is to reduce costs, simplify the science investigators' interfaces with NASA and the STS, and to provide flexibility in experiment selection and processing.

To meet these goals, we are taking a facility approach to provide 80% of the required equipment to carry out science studies.

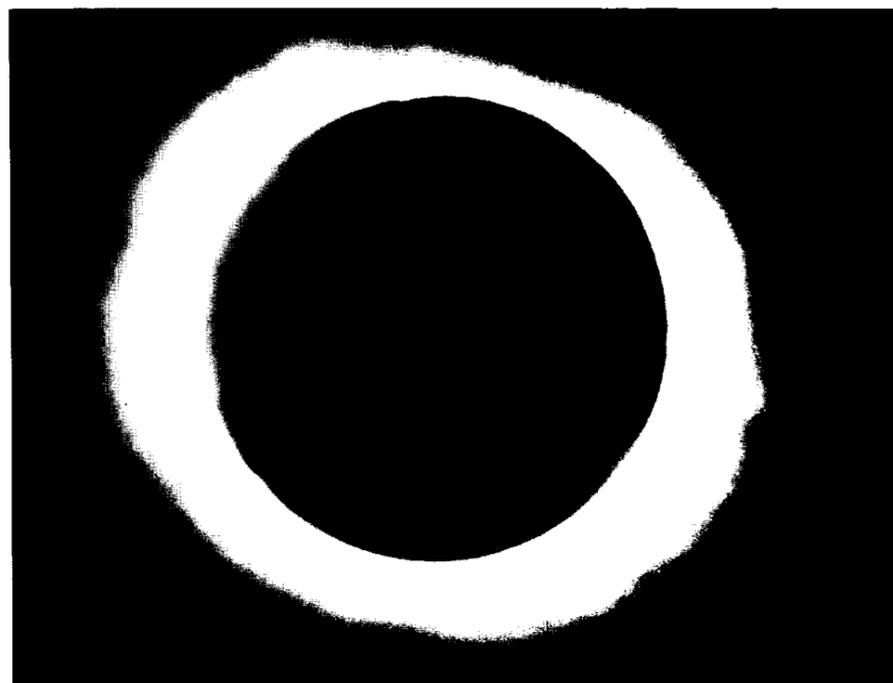
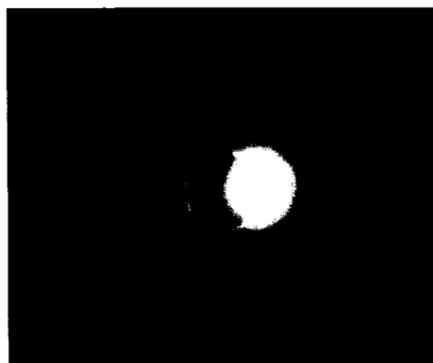
In essence we are trying to develop a bonded stowage room of equipment compatible with zero-g operations. JSC would develop the human experiments and Ames Research Center the animal/biological experiments.

In Environmental Sciences, we are responsible for understanding and monitoring the environmental impact of the Shuttle.

This responsibility includes: contribution of chlorine to depletion of the Earth's ozone layer; noise; launch effects on plants and animals; and preparation of an Impact Statement. JSC has done an outstanding job in this area.

In the future we will complete Shuttle environment studies and expand our efforts in fields which include pollution studies and environmental assessment.

In short, here is the status of the Life Sciences Experiments Program: DEO selection is near completion; 360 experiment proposals are in evaluation; we have funding available to support 1 dedicated pressurized module mission every 12-18 months; and the team is in place and ready to go.



JSC ASTRONOMERS applied their skills photographing the recent total solar eclipse. Above are 2 shots taken from T-38s at 43,000 feet by astrophysicist astronaut candidates Sally Ride and Steve Hawley. Below is a view of the phenomenon from Earth taken by Paul Maley on an expedition with the JSC Astronomical Society. The next total eclipse visible from North America will be in 2017.

Flash on Saturday Afternoon

In order to stimulate early ticket sales and aid in picnic planning, the Exchange Council has agreed to a \$1 reduction in price of all tickets sold before April 27. That means adult tickets will be \$2 instead of \$3 and children's tickets will be \$1.50 instead of \$2.50. Tickets will be sold the week of April 30 at full price.

Where can you beat it—barbecue beef and links, potato salad, ranch style beans, relishes, french bread, pink lemonade, soft drinks, pop corn, snowcones, beer, games, entertainment, and a great shaded picnic area for these prices??? Nowhere but at Saturday Afternoon Fever—May 5, 1979, at Camp Manison.

Roundup Swap Shop

Ads should be under 20 words and include home phone number. Typed or printed ad copy, a separate sheet for each ad, must be in the *Roundup* office AP3 by Wednesday the week prior to publication. Swap Shop advertising is open to JSC federal and on-site contractor employees for non-commercial personal ads. Goods or services must be offered as advertised, without regard to race, religion, sex or national origin.

Miscellaneous

Large size children's gym set, \$25; Grass catcher, \$8. 534-2117 after 5

Nuclear Reactor analog computer w/core kinetics and control functions, extensive source file and manuals, \$300. Samouce x6100 TRS-80 computer basic system w/16k memory, \$850. Bailey 944-3871

360° swivel pedestal for van seat, chevy driver side, can be used universally in rear, \$20. Bauch 333-3382

Tier mounted on rim, Sears Dyna Ply D78-14 less than 2000 miles wear on tire, \$38. x4651

CB antenna, twin Hustler for truck side mirror mounts, \$28. x4651 or x5214

Carpools

Rider to join carpool, leaving Crosby at 6:15 am, for the 7:30 - 4 shift. Brooks x5341

Personals

Wanted: female age 22-28 to share a 2-bdr apt in CLC or Nassau Bay area. DeeDee Andrew x-7286 or 946-8957 after 5

Cars & Trucks

67 Olds Cutlass, auto, PS, air, radio, good work car. McNeely 482-1549

Utility trailer 6x8 1,000/lb capacity for lease to haul furniture, trash, tillers, etc. low rates, local only. Tex Ward 488-5445

78 Chev Impala; 78 Chev Malibu; 76 Toyota Celica; 75 Camero; 73 Vega SW; 72 Toyota Corona; 78 Chev Silverado PU; 78 Ford 150 PU; 71 Foretravel motorhome. JSC Credit Union, collection dept. 488-7070

72 Pontiac Grand Safari SW, w/power and air, original owner, good cond, \$650. Bob Stewart x2133 or 482-1820 after 4

77 Olds Cutlass Supreme, 2-dr, V-8, Auto, AC, PS, PB, stereo tape, 26,500 miles, exc cond, \$4,295 or best offer. Irvin x2744

78 Ford Granada, 4-dr, 19,500 miles, owner anxious, \$5000. Zarcaro x3205 or 334-2416 after 5

76 Chrysler NY Brougham, dual 6-way power seats, sun roof, stereo, loaded, 27,000 miles, like new, \$5300. Bailey 944-3871

76 Ford Custom club wagon, 8-passenger, capt. chairs, low mileage. Nicholson x7474

76 Apache "Roamer" camper, like new, extras. Nicholson x7474

72 Buick SW, new carb, starter, alternator, tires, etc, exc mechanically, fully loaded, AM/FM stereo, etc, \$1250. 488-1846 after 5

67 Chevy Impala, 9 pass, SW, V-8, 327 engine, automatic, factory air/radio, original paint, exc running cond, orig owner, \$600. 944-4581

72 Buick Electra 225, 2-dr, HT, AC, PB, PS, tilt wheel, cruise, exc cond, uses regular gas, best offer over \$1000. x4239

76 Cutlass Supreme Brougham, AM/FM, 8-track quad, tilt steering wheel, cruise, 350 V-8, exc cond, must sell, \$3400. Larry x3871 or Sandra 487-3783

76 Buick Estate Wagon, 3-seat, 27,000 mi, mint cond, loaded including AM/FM tape, CB, \$5075. Barbara x4581

78 Silverado PU, loaded, \$5900. 554-6242

71 Pontiac Sport LeMans, 350-2 (reg gas), auto, air, buckets/console, clean, well maintained, runs and handles beautifully, \$995. 482-7789

Household Articles

Lawnmower (runs), \$15; Oak single bed frame, \$15; 2 brown/gold oval carpets, \$10, \$18.50; grass/leaf hauler, \$5; Big Wheels, \$4; Green Machine, \$11; Wagon, \$3. 482-6027

Cane chair seats replaced, either hand woven or pressed, reasonable rates. Mary Ann 482-0702 or Janet 554-7381

Amana 23 frost free refig, w/ice maker, harvest gold, exc cond, 1-1/2 yrs old, \$525. Margaret 487-1204 after 5

Bassett dining room oak table, 3 leaves, 4 heavy oak chairs, 2 yrs old, \$525. Margaret 487-1204 after 5

Corner sleeper unit, makes two twin beds, exc cond, \$125. 485-5106 after 5:30

Desk, 24" x 45", 3-drawer tan desk with walnut top, exc cond, good for home, student or office, \$65. 485-5106 after 5:30

96-inch contemp designer sofa, like new, used very little, \$825 value for \$175. Bob Stewart x2133 or 482-1820 after 4

Six Queen Anne antique side chairs, uph'd seats, exc cond, all or none. 523-3185

Hide-a-bed, wingback couch, 2 T-cushions, herculon tweed, yellow/green/beige, tufted back, like new, \$200. 488-2795 after 5

Property & Rentals

For Rent: Summer season's approaching. For information on west Galveston Island cottage. 334-1640 after 5:30 or weekends

For Rent: Baywind Condo, 2-bdr, fireplace, attractive interior, patio, pool and club facilities, 1000 sq. ft., no pets. 334-2461

For Sale: By owner, Huntington/Pasadena, 3/2/2, enclosed patio, exc cond. 487-1535 after 2:30 pm or weekends

For Rent: Bolivar Peninsula, by day, weekend or week, reasonable rates. 482-2929 or 482-6883

For Sale: Lake Livingston lot, Holiday Shores, lake view, trees, pool, tennis, boat ramp, restricted, \$2240, terms. 488-5445

For Sale: Newport, 4-2-2 Old English, new carpet, vinyl, paint, cedar fence, trees, exc cond, walking to elementary school and pool, assume 6-1/2% FHA or new loan, \$63,900. 332-6419

For Rent: Vacation Lake Livingston Cape Royale. Enjoy charming custom 3-2-1, compl furn hom nestled among trees by the water, rent by wk/mo/yr. 488-4487

Pets

Gentle, equitation trained, 5 yr old, palomino grade (1/2 App, 1/2 Arab) mare and 9 mos old registered 1/2 Arab filly, \$550 each or \$1000 both. Ullrich 487-0307

Boats & Planes

2 Wellcraft boat seats, back-to-back lay-down type, brown, fair cond, \$15 each. 488-1665 after 5

Stereos & Cameras

Stereo components: Scott receiver, \$95; Akai auto reverse cassette full record-play, \$200; Sony reel-to-reel, \$145; Realistic speakers, \$45 pr. Johnson 488-5010

Philco stereo console, fruitwood cabinet, 16 in x 38 in x 27 in high, AM/FM radio and turntable, \$45. 485-5106 after 5:30

Roli professional 2-1/4 twin lens reflex, new over \$950 sell \$225; 35 mm w/3 lens, \$175. 488-1846 after 5

New automobile AM/FM/CB (1-hander), \$70; new AM/FM/Cassette, \$85; Speakers, \$22 pr. 488-1846 after 5

Cycles

Two Yamaha motorcycles: 78 x5750E silver, 77 RD400 blue, Low miles, like new. Nicholson x7474

20" girls bicycle, \$20. Stokes x3534
75cc Italjet Indian, never raced, clean, \$300. 488-1665 after 5

250cc Yamaha Enduro and 125cc Yamaha, electric start, low miles, clean, street legal, \$300 each. 488-1665 after 5

Yamaha YZ 80, 1976, exceptional dirt bike for the younger set, \$250. Presnell 482-7786

81cc cylinder, piston, race cam, valve springs, intake manifold, 22 mm carburetor, new gaskets and rings for 74-75 Honda XR75, \$75. White 474-2214

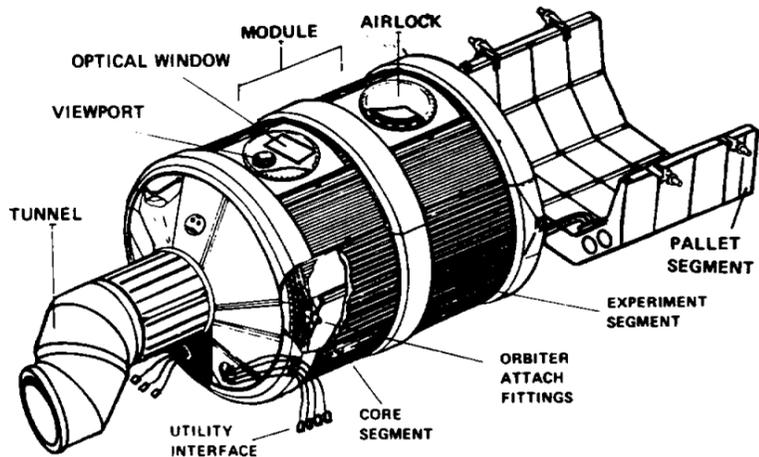
Wanted

Tailgate for a 71 or 72 chev PU, long wide bed, no rust. Mark Lee x7447 or 482-0804 after 5

French Provincial chase lounge. 334-2461
Good used piano and radial arm saw. 488-1846

Contact with other Health H-8 computer users to swap ideas, programs, etc. Bates x4601

They will practice their science in orbit



(Editor's Note: Last month the 5 Payload Specialists who will work with Spacelab I spent 2 weeks in training at JSC. This Center has primary responsibility for all life sciences experiments onboard Spacelab.)

First in a series

Spacelab. Orbiting at 250 km above Earth, scientists will conduct as many as 100 experiments at a time—operating equipment in the pressurized module, exposing instruments to Space from the open pallet.

At the end of a day's work, the scientists will float through the tunnel to the Shuttle cabin for supper, recreation, and sleep.

JSC scientists have 2 experiments on Spacelab I: Mil Reschke and Jerry Homick will be studying human vestibulo-spinal reflex responses in spaceflight—seeing how the body's

reflexes respond in the unique Space environment. Stephen Kimzey will be analyzing changes in red blood cell mass hoping to find a cause for reduced circulation—a phenomenon discovered during past manned missions.

"What we have been doing here is learning how to be good lab technicians," said PS Michael Lampton. "We spent several days sticking each other—taking blood samples, learning how to run a centrifuge."

Lampton, who specializes in X-ray astronomy, Ultra-Violet ray astronomy, space physics, optics, and electrical engineering is from Berkeley, Calif.

"The Payload Specialist is the investigators' man onboard," Lampton said. "We're there to look out for problems that might crop up in the laboratory, and to make sure the Principal Investigator knows that we have a problem there developing."

PS Ulf Merbold elaborated: "In some

places we recommend that they use equipment from other experiments," he said. "Sometimes there could be potentials onboard Spacelab that are not used by 1 set of Pl's because they don't know about the other Pl's work. We are the people who know not only 1 experiment, but all the others."

Merbold is an atomic physicist from the Max Planck Institute in Stuttgart. He has specialized in irradiation experiments performed with fast neutrons on iron and vanadium.

While at JSC, the PS's flew in the KC-135 zero-g aircraft testing operation of Kimzey and Reschke's experiments at negative gravity. They practiced Reschke's Hoffman reflex response tests, rotating the jobs of test subject and technician. They prepared for Kimzey's blood sampling workups, learning how to measure hemoglobin concentration, how to make particulate slide stains, how to do centrifugal separations.

"We have to learn enough about conventional lab techniques to be sure that the samples will be useful when they're returned to Earth," Lampton said.

There will be 79 experiments on the Spacelab I 7-day mission. The Payload Specialists will coordinate imaging observations of the dayglow spectrum of Earth's atmosphere at the same time as they conduct microwave remote sensing of ocean surfaces. They will measure cosmic ray isotopes coming to the Earth from the Universe at the same time as they act as test subjects for life sciences experiments.

Part of their preparation is "fitting together these procedures timewise," Lampton said.

As the interview ended, they returned to their round-table discussion. Merbold

was suggesting ways to attenuate cabin noise levels. Lampton was writing down problems he'd found with the intravehicular suit pant leg. They were studying diagrams of Spacelab to see where wires could be connected, where a medical tape recorder could be set up.

"We are still 2 years from mission now, but I can tell you we are really busy," Merbold said.

Next: Reschke's H-reflex experiment testing at the Space Center.

Spacelab I will be a 2-shift, 24-hour operation. Each shift, either the Commander or Pilot will be in the cockpit, and 1 each of the 2 Mission Specialists and Payload Specialists will work the science.

MSs are full-time NASA astronauts, as opposed to PSs who are chosen by the principal investigators who have payloads on the mission.

All 4 have to be thoroughly familiar with the onboard experiments. "In the past 6 months we've spent half our time on the road," said Owen Garriott, MS with Robert Parker on Spacelab I. "We have visited with every investigator." There are 75.

During the mission, MSs have the additional responsibility of monitoring Spacelab systems: onboard power, environmental control, the VFI (Verification Flight Instrumentation). So in addition to a complete knowledge of the experiments, Garriott and Parker are training now and the next 2 years to get a total understanding of how Spacelab operates.

That may explain why sometimes it's hard to reach them on the phone.

Experiments at zero-g

Continued from Page 1

parabolas since the early 1960's to simulate weightlessness and see how equipment, experiments, and human beings will function. This Boeing KC-135 has been at Ellington for NASA's use since August 1973.

"Those early experiments were so crude by today's standards," says Griggs back in his office that afternoon. "The

questions they were first asking were, 'Can you swallow?' In other words they didn't know whether it was a muscle that put the food in the stomach or if it was gravity. Then they tested the effects on speech, vision. Today we laugh at it, but they were dead serious back then."

Today on a typical 40-parabola flight, the science is more sophisticated but the work is still serious.

A JPL Drop Dynamics experiment flew last month—tests of what may be a nuclear fusion power system for future spacecraft. In zero gravity Griggs and Magers used acoustics to melt a glass bead to a perfectly round uniformly thick ball. In the future these beads would be brought to a molten state, injected with beryllium, then shot by a laser and brought to melting temperature, creating enough heat for fusion.

The success ratio on the KC-135 for producing the round glass beads has been unexpectedly high, Magers says.

"We also did a test of the External Tank," Magers adds, "an abort, return to launch site. We had a 1/10 scale tank and we ran tests to see what's going to happen to the residual fuel: Would it hit the spacecraft, accelerate past it? What reaction would it have?"

"That first time in weightlessness when you reach for a switch, you'll overshoot," Griggs says. "We are testing everything involving the human that goes on in Space."

Waste management, food processing, hand washing, rescue balls—all are tested on the KC-135. Shuttle payloads and life support are perfected; and astronaut candidates are learning how to throw those switches.

Griggs leans back in his chair with a slow grin. "We pick the icing off the cake," he says. "Here the scientist has



KC-135 crew runs JPL Drop Dynamics test



Rescue ball tests at zero-g in 1974

put 2-3 years' work into his experiment. He brings it in here and we get all the fun of testing it and flying with it."

Griggs has flown over 55,000 parabolas in his years with the USAF and NASA/JSC.

"When man in Space was just starting, they couldn't get anybody to sponsor getting an airplane on line until they could prove they could simulate weightlessness," Griggs says. "So a group of 3 of them went up and hung their

career on the line. The aircraft wasn't modified, and they were just floating in the aisle. They just bootlegged it, tried it, proved it could work, and then came back and got the scientific community convinced they could use it."

They've been convinced. NASA's KC-135 flies an average of 2500 parabolas a year, about 200 flight hours. The bulk of the experiments over the next few years will be testing Shuttle payloads.

Think Tank

5 shipwrecked sailors and a monkey spend a day gathering coconuts. That night, 1 sailor wakes up feeling uneasy and divides the coconuts into 5 equal piles. He has 1 coconut left over which he gives to the monkey, and hides his pile in the bushes. He then pushes the other 4 piles back together and goes back to sleep. Each of the other sailors does the same thing in turn. Next morning they divide the coconuts and they come out even. How many coconuts did they gather the day before?

Send your answers to Roundup AP3 Puzzle Editor by Thursday April 12. Most brilliant replies will be recognized in the next issue.