

Update: Working towards March launch date

Nearly all major testing is complete, projects are being solved, and the plan is to keep working for an end of March launch date, reports Ken Kleinknecht. He was speaking at an Orbiter status press briefing at Kennedy Space Center October 29.

Kleinknecht, of JSC's Orbiter Project Office, is on assignment to KSC as OV-102 Vehicle Manager.

He enumerated recent successful tests: "We have operated the payload bay doors under their own power; we have completed the ammonia boiler test and frequency response tests; we have completed spacesuit to vehicle integration."

A number of tests are scheduled for November; among them the main propulsion system test firing this weekend, main engine modifications, and "equipment in vehicle" tests with the crew on the Orbiter.

Vehicle rollout is scheduled for December 21, 1979.

The propulsion system static test firing was postponed from the original October 24 date because of a small hydrogen leak in the Orbiter aft compartment which surrounds the main engines.

"It is in an inert area," said Frank Stewart, test manager at Marshall in Huntsville, Alabama. "If we could have isolated it to one of the lines that can be disconnected after ignition, we could have safely fired the engines."

As of *Roundup* press time, the test firing is scheduled for November 1-4 at NASA's National Space Technology Lab in Mississippi. "There will be a 40 minute run of the total onboard hydraulic system," said Bob Gray of the Shuttle Projects Office at KSC.

At the briefing Gray also addressed the External Tank icing problem. "We

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Report to the President

The program is technically healthy

Shuttle managers are getting ready for the transition from a technical development stage to an operating Space Transportation System, reads NASA Administrator Robert A. Frosch's report to the President.

Frosch and President Carter are to meet November 5 to discuss the Shuttle program. The Shuttle report, the result of

studies initiated last July, was delivered to the White House October 16.

Test criteria and test results will get a "detailed analysis" during the next six months "to support decisions on commitment to first flight," the report reads. Dr. Eugene Covert of MIT will continue his "detailed critical oversight" of main engine development; and the Congressionally-chartered Aerospace Safety Advisory Panel will increase its attention to "the overall integrity and safety of the Shuttle system."

"It must be recognized, however, that an element of risk always exists in space flight operations," the report adds.

"The review group for the thermal protection system has essentially completed its examination of Shuttle tile installation procedures, structural testing, and safety margins," the report reads. "The group concurs with NASA's current courses of action."

The report describes the creation of the Offices of Space Transportation

System Operation and Acquisition (*Roundup* October 19) adding that both offices will emphasize "financial and schedule management functions."

Regarding communication within the program, "the information system is being reorganized to improve the accuracy and timeliness of technical and financial data provided from the contractors, to provide for rapid verification and analysis of these data, and to create an effective process for presentation and evaluation of status and forecast information."

It adds that there will be additional resources for "audit, review, and early-warning functions."

All those who have examined Shuttle development agree that the program is technically healthy, the report says. "While there are problems to be solved and many unknowns still to be faced, there are no currently known serious problems that we do not know how to solve."

US-USSR Meeting

Solving the problems of humans in space

With a regular program of exercise, massage to areas where calcium loss occurs, and time spent in a negative pressure suit, humans can remain in space for extended periods of time, reports Dr. Anatoliy Yegorov of the Soviet space program.

He spoke along with other scientists of the US-USSR Joint Working Group on Space Medicine and Biology at a press conference October 26. The group held its 10th annual session at JSC October 22-31.

A major topic of the meeting was data from bedrest studies conducted by both nations this year. Until recently, investigators were using dissimilar methods, making comparison of American and Soviet data difficult.

The agreement at last year's meeting to conduct bedrest studies under strict and identical conditions was lauded by members of the group as "a milestone in Soviet-American relations."

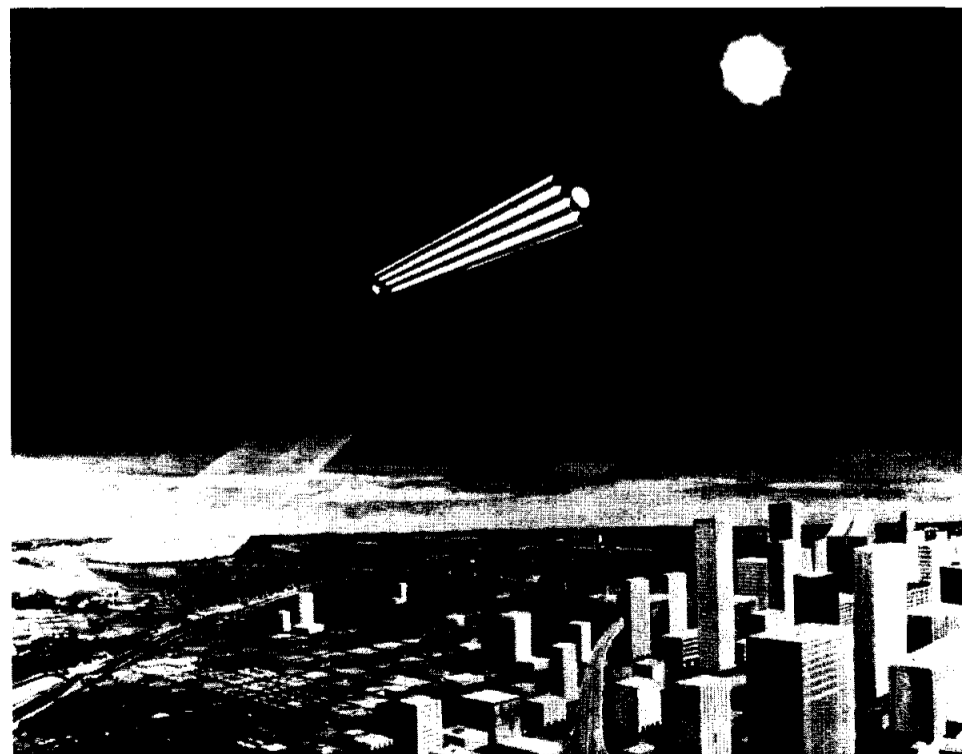
At this meeting a charter to join efforts in solving the problems of man in space strengthened the harmony of the group. "Each year a better understanding and more cooperation results from the Working Group sessions," JSC's Dick Johnston, Director of Space and Life Sciences, said.

Soviet scientists will fly an experiment on Spacelab, he added.

Joint biological experiments are currently flying on the Soviet COSMOS satellites. One returned recently, and initial studies are showing that "bone growth in the rat ceased during spaceflight," reported Kenneth Souza of Ames Research Center in California.

"We are looking into that problem now," he said.

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Solar Powered City

Construction techniques, new test articles, and where to house base personnel were among topics covered at a final briefing on solar power satellites held October 16 at the Space Center. "By the year 2000 we could have the first commercial projects," said Clarke Covington of System Design. "To do that we'd need test objects in low Earth and geosynchronous orbit by the late 1980s." Evaluations with the Department of Energy should be complete by mid-1980. (1977 theme art)

Head Up Display

Optical landing aid to go on Orbiter

An optical landing aid used by pilots of more than 20 U.S. and foreign jet aircraft will be installed on NASA's Space Shuttle Orbiters to assist astronauts in the final critical minutes of landing the 75-ton spacecraft.

Called Head Up Display, the system has been in use in foreign jets since 1968 and American commercial and military aircraft since 1970. The Orbiter Head Up Display will project instantaneous displays of spacecraft speed, descent rate, altitude, and other critical flight parameters onto a transparent viewing glass located above the cockpit window. The display hangs down much like a sun visor on an automobile.

The system will be installed in Columbia in time for the first operational flight of Shuttle, which is expected early in 1981, following completion of the Orbital Flight Test Program (OFT)

NASA has authorized the Space Systems Group of Rockwell International, Downey, California, prime contractor for the Shuttle, to provide a head up display system for the commander and pilot for all NASA Orbiters, including the Columbia.

NASA's decision to equip Shuttle Orbiters with optical systems follows more than two years of research and evaluation which included dozens of test flights by NASA pilots in aircraft outfitted with one of several commercially available systems.

During landings, an aircraft pilot or a Shuttle astronaut must monitor his approach to the runway as well as watch the controls and displays which are below his direct line of sight. The pilot must move his head up and down in order to look out

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Bulletin Board

Please limit announcements to 10 lines, double-spaced copy

Learning More About Your Rights

There are still spaces in Classes Two, Three, and Four of the Survey Law Course which was set up by the EAA. Class Number Two, Torts and Anatomy of a Civil Law Suit, will be November 13; Class Three, Family Law, will be November 20; and Class Four: Wills, Trusts, Probate, and Real Property will be November 27. Classes will be held in the Rec Center from 6 - 8 p.m. The Survey Law Course is conducted in conjunction with the NASA General Counsel Office and the Consumer Fraud Division of the District Attorney's Office.

Basketball Season Coming Up

November 7 is the last day to register your basketball team for the Fall-Winter Men's Basketball League. Games will be played on Tuesday, Wednesday, and Thursday evenings at Gilruth Center Gym beginning in November. Fees for the seven week season are \$90 for EAA members and \$140 for non-EAA members. A double elimination pre-season tournament is included in the registration fee. The league can accommodate 24 teams so registration will be on a first come first serve basis. Rosters may be picked up at the Rec Center, Bldg. 207. For additional information, call X-3594.

Women's Volleyball Teams Forming

Registrations for a new Women's Volleyball League are now being accepted at Gilruth Center. Games will be played on Monday evenings beginning November 15. The season will be 10 weeks long. Fees are \$45 for EAA members and \$90 for non-EAA members. Rosters may be picked up at the Recreation Facility, Bldg. 207, or call X-3594 for more information. Registration deadline is November 11.

Watch for Them On Channel 8, PBS

The development of modern day rocketry was a direct result of Napoleon's need for an efficient way to store provisions. So says writer/narrator James Burke in episode eight of *Connections*, "Eat, Drink, and Be Merry," to be aired November 28 at 7 p.m. on Channel 8. He says Napoleon discovered that gases in thermos flasks stored at low temperatures

would produce a tremendous force when ignited.

Other shows of interest: "The Real War in Space" at 8 p.m. November 12 will look at some expert predictions on the technology of space research and weapons development. On *Nova* November 13 at 8 p.m. "The Case of the Ancient Astronauts" examines the notion that years ago beings from other worlds visited Earth, and comes up with some surprisingly Earthbound explanations (repeated November 17 at 3 p.m.).

The
blood
drive
wants
you



On Sale at the JSC Exchange Store

(Store Hours 10 AM to 2 PM)

Dean Goss Tickets-\$10 Single
\$20 Couple (Reg. \$14.50 each)
ABC Theatre Tickets-\$2 each
General Cinema Tickets-\$2.40 each
Six Flags Over Texas Tickets

Blood Drive Continues

The JSC Blood Drive WANTS YOU—to contribute on Thursday November 8 at Gilruth Center. For an appointment call Jim McBride at X-2541 or Bob Jones at X-6251.

\$7.25 for one day (Reg. \$9.25)
\$9.25 for two days (Reg. \$13.25)
Astroworld Tickets-\$7.25 (Reg. \$9.25)
Magic Kingdom Cards-Free
Sea-Arama Marineworld Fun-Time Card-Free
FBA presents "Entertainment 80" Available at the Exchange Store Nov. 1, 1979, \$15 per book.

Get away from that rattlesnake

JSC engineer Emmitt Fisher is taking his speech "Encounter With a Rattlesnake" to the top of Toastmasters' pyramid, winning the Eastern Division Humorous Speech Contest October 20 after taking first place at the Area One contest September 22 and at the local Spaceland Club contest September 12.

"There are two things you must know about that old rattlesnake," Fisher advises in his speech. "Number one: He has poor vision. Number two: He bites at just about anything that moves.

"So first thing you want to do is to stop. Next thing you want to know is, How long do I have to stay here?"

"The thing is to divert that old boy's attention away from you," Fisher continues, advising that you remove an article from your pocket—"Don't get that pant leg dancing in front of that rattlesnake"; draw an imaginary line about a foot and a half

away from the snake's head—"Mind you, I said an imaginary line"; then drop the article and "If he takes that bait, you get on out of there."

Fisher will repeat the speech in competition at the District 56 Toastmasters International Conference in Galveston November 2-4. For more information about the club, contact Angie Johnson at x-6134.

Head Up Display Ordered

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the window and glance down at the displays.

Pilots refer to visual transition, out the window and at the controls and displays, as two different worlds—the real world as seen through the cockpit window and the instrument world located about 30 inches below the pilot's direct line of vision.

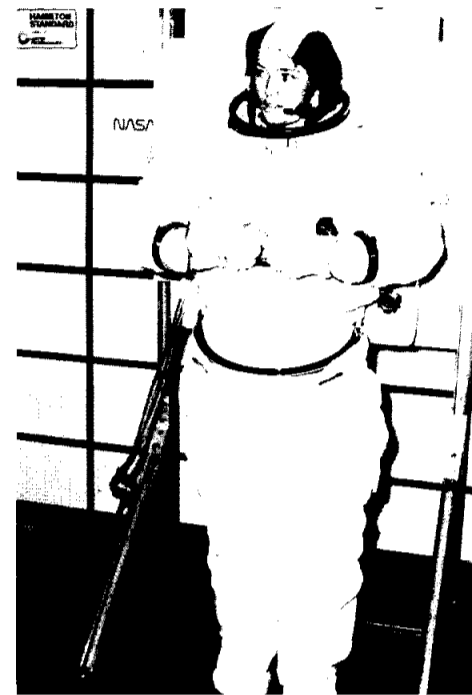
Visual transition from the real world (head up) to the instrument world (head down) is a problem during both clear weather and visually restrictive weather conditions. During the final moments of landing, the pilot's workload increases because of more frequent visual switching required between the two worlds.

The optical display system permits the astronaut to look out the cockpit window at the approaching runway. At the same time he has the projected displays in front of him. The data projected on the look-through glass panel will include air speed, altitude, and descent rate—which in effect shows the astronaut where the

benefits: Carpooling boosts employee morale. A certain camaraderie develops when you make trips to and from work with passengers, rather than cursing the traffic to yourself. Also, carpooling relieves parking problems.

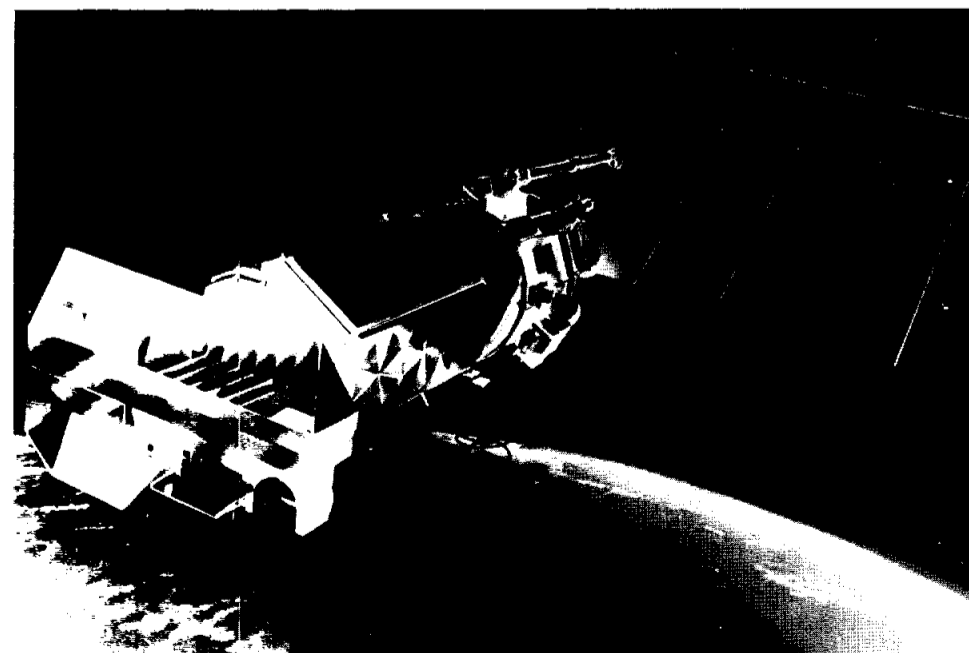
The Houston Federal Executive Board sees the CarShare Program as one of the best solutions to federal employees' transportation problems.

If Swap Shop ads and cards tacked on bulletin boards haven't worked for you, call the CarShare office at 227-0003. They will start right in finding a ride-to-work match for you.



Spacesuit donning

Anna Fisher completes a donning exercise with the extra-vehicular mobility unit. Onboard the Orbiter, the unit is on the airlock module wall. The astronaut backs up and into the unit and life support system.



Sunwatching Satellite

The solar power array of the NOAA-A advanced weather satellite is pointed toward the sun in this artist's concept from RCA. NOAA-A, second in the advanced series of weather satellites, is launched from the Western Test Range at Vandenberg AFB in California. The spacecraft was designed and built by RCA Astro-Electronics through NASA's Goddard Space Flight Center in Maryland. The program is funded by NOAA, which operates the satellite after checkout by NASA.

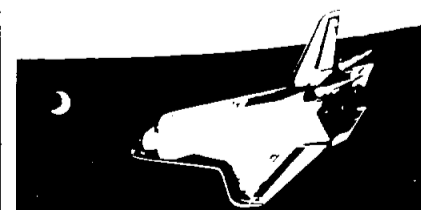
Travel Plans?

Make reservations now for the best rates during Christmas season. Flights are filling up fast. Call the Travel Office at x-3305.

Need Extra Christmas Money?

Turn in a Cost Reduction idea by Thanksgiving and you can earn extra money by Christmas. Send a Form 1150 to Mail Code BE3.

Roundup deadline is the first Wednesday after publication.



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 all Space Center employees.

Writer/Editor:

Kay Ebeling

Hinners sees manned lunar base in 1990s as a goal NASA needs for the next decade

Dr. Noel Hinners, Director of the National Air and Space Museum and former Associate Administrator for Sciences of NASA, spoke at a symposium in the Senate Caucus Room, "Next Steps for Mankind—The Future in Space," held July 19. The following are excerpts from his speech.

We're in a period of real transition in the space program, going from a period of high-focus event orientation to one of steadier activity throughout the 1980's.

It is in the next five years that the course for 1985 to 1990 will be firmly established. That course can be one of "let's study it" untraconservatism, leading to relative stagnation and a limited choice for the 1990's; or it can be one which takes a bold and imaginative approach with commitments which allow the country to make the 1980's a decade of development.

The knowledge acquired about the Moon through Apollo and its precursors is indeed formidable. As in all science endeavors, however, the research and exploration generate more questions than they answer. The new questions are more sophisticated and many could not have been posed before.

Based upon the demonstrated value of astronauts conducting Apollo science tasks, I believe most such investigations are ideally conducted from a manned lunar base. Science will not be the total *raison d'être* for establishing a lunar base, but it most certainly will be the chief

beneficiary in the near-term and it can lead the way in establishing requirements.

To aim for the first phase of lunar base activity, months in duration per mission in the early 1990's, strikes me as reasonable, probably building up in a modular fashion. Lunar bases will be a reasonable step in the progression of sustaining life away from planet Earth. It requires that the 1980's see additional steps in development of space transportation, some version of a reusable orbital tug, and research into regenerative life support systems. Many of these developments are analogous to those required for space stations.

I am guessing that it will take another three years after the Shuttle becomes operational for the user community of scientists, engineers—including industry—Government, and academia, to adequately evolve their thinking and equipment to take full advantage of the Shuttle and the Spacelab.

High priority should be assigned to experiments which require the use of rudimentary space construction techniques. The development of space construction techniques is crucial to any consideration for major projects such as space platforms or solar power satellites.

The temptation will be to modify existing hardware. The implications of yielding to that temptation should be examined very carefully. There's a point at which it truly pays to start from scratch. Changing the sparkplugs of your car testifies to that these days.

President Carter, in his July 15 energy address to the Nation, decried the general crisis of confidence, including the erosion of confidence in the future. He pointed out that we ourselves are the same Americans who just 10 years ago put a man on the Moon.

It's clear to me that the U.S. civil space program has provided one of the key elements for the future of our country. It's an

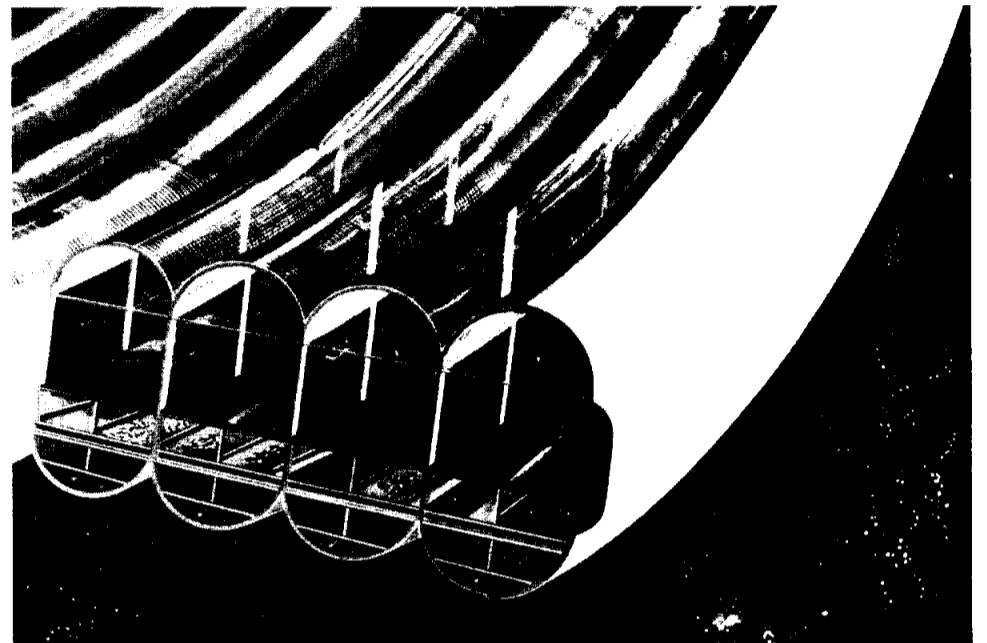
indicator of the great capability of American technology, of the inventiveness of her scientists, of the exploring spirit of her people, and of the openness of her society.

Professor Carl Sagan's speech at the Senate symposium will be featured in the next issue of Roundup.

"It may be that the old astrologers had the truth exactly reversed when they believed that the stars controlled the destinies

of men. The time may come when men control the destinies of stars."

Arthur C. Clarke



Ames theme art of an agriculture base in orbit

Profile

Multi-faceted and marked for success

Some people get a bachelor's degree; take the required hours of foreign language, math, and badminton; get an entry level government job; and feel like they've "arrived." That's it. Ready to work the eight to five routine and plan vacations.

Then there are individuals like Joseph Degioanni, M.D., who at age 33 has three lifetimes' worth of accomplishments behind him and is still working on more.

Degioanni got a Ph. D. and an M.D. within a week of each other in 1973. He did the course work in astronomy, then went into medical school taking one quarter off a year to work on his thesis.

His friends told him the going might be rough, but "the worst thing about it was having to take the Illini Central commuter train between Chicago and Champaign," he says.

To meet the requirements for aerospace medicine, Degioanni picked up a Master's in Public Health, then launched his career. "I stacked all the cards on my side to be sure I'd make it," he says.

From his perennial grin and enthusiasm you can see he's breezed through it all and knows he's only begun.

Degioanni is a flight surgeon at JSC. "It's a mixed bag thing," he says. "We do so many jobs. Make sure the astronauts stay in good health—of course, they do that anyway.

"We're also responsible for medical support for the Shuttle," he says



Dr. Joseph Degioanni

pulling out a blue lightweight doctor's bag. "Like this Space Shuttle medical kit we just finished designing."

He points out injectibles and tablets in the kit. "I gave Young and Crippen nine hours of medical training. Oh, I didn't mention but I have another specialty which is emergency medicine." He still works an occasional weekend in Houston emergency rooms "to maintain my currency," he says.

His biggest pride today is the aerospace medicine residency program he is setting up and will supervise. NASA-JSC will train physicians over a two-year period, in conjunction with the University of Texas.

"The students would after that time be eligible to take the boards for aerospace medicine," he says. "And it's happening. We're being certified by the AMA, and we have our first resident coming in January."

With all these projects, Degioanni still finds free time to fly in his plane and ride around in his boat. And he has a family; a two-year-old child, and another on the way.

Flying is a hobby and part of his job. He rides in the backseat of T-38's, flies parabolas in the KC-135, and goes on missions on the Shuttle Training Aircraft. "Being a flight surgeon, you have to get some first-hand exposure to what the pilots go through," he says.

Degioanni speaks four languages (all with a sense of humor). He was born in Italy and grew up in France, Africa, and South America. He looks forward to being a crew surgeon for a Spacelab mission so he can go to Europe and use his languages.

His family moved to Canada when he was 16, and there he first went to college and spoke his first English.

"That's how I got into physics and astronomy," he says. "It was the only language I could communicate in."

He shrugs. "Otherwise maybe I would have majored in literature."

Flu Shots

Flu shots are available at the JSC Clinic on a drop-in basis, 10-11:30 a.m. and 3-4 p.m.

Update

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have two or three designs for a concept of expandable devices that go around the vents to collect the gases," he said. "We've run quite a few tests on it and are pretty well convinced it will work."

Gray too stated that all work is geared for an end of March launch date.

"If enough people talk about schedule slips, they will happen," Kleinknecht said. "If we don't keep up the dedication and work to meet the schedule, it will slip."

"We have the plan and we have the resources to stay on schedule," he said.

US-USSR

Continued from Page 1

The group is comparing atmospheres onboard spacecraft, and discussing ways to produce atmospheres in flight by biological means. Cosmonauts, like astronauts, are still encountering motion sickness in the first three to five days of flight.

"We hope to get a better handle on this in the Shuttle series," said JSC's Dr. Lawrence Dietlein.

The day after the recent 175-day mission, Soviet cosmonauts were able to "stroll about," Yegorov said. "They were in good health and soon able to start their routine vacations," he added, attributing the lack of muscle deterioration and calcium loss to an exercise program and "inertial stress strokes" to the heels.

The group will continue to fly animals, plants, and insects on COSMOS satellites; conduct hypokinesia (bedrest) studies; and search for the optimal spacecraft atmosphere in the next year.

"Our goal is to settle problems so humans can, without deterioration of health, carry out long-duration space flights," said the American co-chair, Gerald Soffen of NASA Headquarters.