

photos revealed only two impact craters large enough to have tossed appreciable numbers of boulders out onto the terrain. The chosen site is strongly reminiscent of a lunar mare, complete with a few extraordinarily mare-like ridges (which obligingly soften as they enter the precise landing ellipse). Several channels may have deposited sediments in the area, although the grooves characteristic of strong flows disappear before reaching the ellipse, and lava flows may have covered much of the deposition.

The critical procedure of checking out the landing craft is scheduled for Sunday



Viking's landing ellipse.

evening, July 18, and assuming no delays there, the landing is set for 5:12 a.m. PDT on Tuesday morning, July 20. It's not the Fourth of July, but it is (although not by design) the seventh anniversary of the first manned landing on the moon. The

## Cosmonauts in orbit

Two Soviet cosmonauts are in orbit aboard the Salyut 5 Space Station, in a mission intended to last 90 days, which would eclipse the 84-day man-in-space record of the third U.S. Skylab crew. Boris Volynov (bottom) and Vitaly Zholobov were launched July 6 aboard the Soyuz 21 spacecraft, and the following day boarded the space station, which had been waiting in orbit since its launch June 22. Salyut 5, according to Soviet officials, has at least two docking ports to enable subsequent spacecraft to resupply the facility. Unmanned Soyuz vehicles have previously performed automatic dockings with an earlier Salyut. □

Viking scientists' vote on the new site was unanimous, making Project Manager James Martin's decision a relatively easy one. "This," says site-selection chief Harold Masursky, "is the end of our long march." □



Wide World Photos

## Living in space: A view from Salyut 4

Now that Salyut 5 has gone into orbit the feelings and speculations about the life of humans in space expressed by two cosmonauts who spent 63 days aloft in Salyut 4, V. I. Sevastyanov and P. I. Klimuk, gain even more point and poignancy. They shared their attitudes and ideas with a group of mostly American reporters at the recent meeting of COSPAR, the International Council of Scientific Unions' Committee on Space Research, in Philadelphia.

The first thing the reporters wanted to know was whether the Soviet manned space-flight program would continue. Certainly it would. Was this year's schedule complete? Well, no manned flights had yet been made in 1976; how can you say that something is complete when it hasn't begun? (It may be that Sevastyanov and Klimuk did not want to say anything definite about Salyut 5 in advance in case of some trouble with the mission.)

Americans, who—according to the old joke—would exert themselves building bigger and better elephants—wanted to know whether bigger Salyuts would be built. "Maybe," said Sevastyanov a bit touchily, "but there's no rationale." Salyut had carried as big a scientific payload as the larger American Skylab, one reason being that its crew consisted of two rather than three. Would future Soviet vehicles be equipped to dock with American ones? Possibly, said Sevastyanov. It depends on the future of cooperation between the two countries. (The tone of the answer was hopeful.) Was a Soviet space shuttle under consideration? Sevastyanov allowed that a reusable shuttle was aerodynamically feasible and economically attractive, but

neither cosmonaut could or would say whether one was planned or under construction.

Up to this point Sevastyanov had answered most questions, and he said "Why don't you ask some questions of Mr. Klimuk?" Klimuk responded: "The reason he monopolizes the answers is that he has a television program. . . . He's used to moderating."

Klimuk answered the question about life aboard Salyut. Missions longer than two months were possible, he said, (Salyut 5 will attempt a 90-day mission) but there is a problem with regard to cosmonaut fatigue. What made you tired? Weightlessness? Cramping? Not weightlessness, and not cramping. "There's 90 cubic meters of space in a Salyut." The problem is that you are always busy. On earth people take time out for a breather. They have recreational possibilities. They go to the theater or a cinema. (Maybe space capsules need in-flight movies.) In the Salyut you're working all the time. Then, too, there's the problem of spending so much time in the company of one other person, no matter how friendly you may be. On earth people vary their associations from person to person. And then there are things you would like privacy for, and you don't have privacy. And last but not least: "There are no pretty girls up there."

Important as are the scientific experiments regarding the earth and its near environment that the manned laboratories do, the two cosmonauts believe such flights have an even bigger significance: as a kind of dress rehearsal for man's eventual colonization of space. "Man has to go into space," said Sevastyanov. "Earth's resources are limited."

The reporters asked if the cosmonauts were familiar with Gerard K. O'Neill's proposals for colonies at the Lagrangian points of the moon's orbit. Indeed they were. On the way to Philadelphia, they had stopped at Princeton, and one of O'Neill's students had explained the whole thing to them. They think it's a worthwhile idea, and the sort of thing that should be pursued.

It is also being pursued by NASA. Right now a summer study chaired by O'Neill is taking a closer look at technological details.

But life in early space colonies is likely to be different from what we're used to, Sevastyanov speculated. We have to consider it in its totality. Life would be better than on earth. A scientifically controlled environment would eliminate pollution. But it would be so different from what we're used to as human beings—no roses—no nightingales.

Maybe it was Mozart, 200 years ago, who provided the anthem for this homily in the haunting melody he wrote for the equally poignant words of the *Nachtigallenkanon*:

*Alles schweiget. Nachtigallen  
Locken mit süßen Melodien  
Tränen ins Auge,  
Schwermut ins Herz.*

[All is silent. Nightingales  
With their sweet melodies  
bring tears to the eyes  
Melancholy to the heart.]

The last time I joined a group of voices chasing each other through that song was on top of a mountain in the lovely Vermont summer. Well, there'll be no green mountains in early space stations either.

—Dietrick E. Thomsen