SPACE EXPLORATION

THE ONCE AND FUTURE SPACEMAN

BY SANDY FRITZ

Buzz Aldrin likes coffee. Even burnt, hours-old office coffee is palatable to the 63-year-old former astronaut who pulls hard on his fifth cup of the morning. The hand clutching the cup sports a curious gold ring shaped like a crescent moon with a star facing it. "It's a little of the past and a little of the future," explains the second man on the moon. "It's what I'm all about."

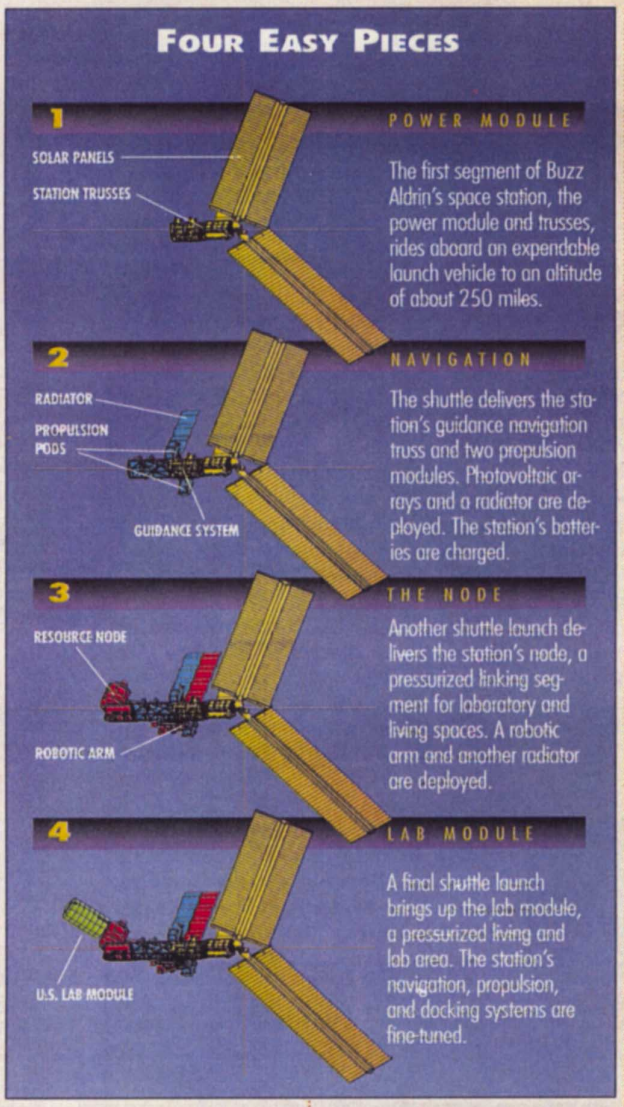
This complex, brilliant, stubborn man, still hale and steely 25 years after *Apollo 11* ferried him and Neil Armstrong to the moon's surface, has not rested on his laurels as some of his comrades have. Sure, he's proud of his role in the first moon landing, but that was long ago. Today, Aldrin has a new mission.

Aldrin wants to see an American space station in orbit and is doing everything within his wide-ranging sphere of influence to make it happen. Recent designs of the space station Freedom call for about 18 shuttle launches to transport the necessary materials into orbit. At close to $1 billion a launch, that strategy is no longer viable.

Not a test pilot but a West Point graduate with a doctorate in astronautics from the Massachusetts Institute of Technology in Cambridge, Aldrin has developed two alternatives that are receiving serious attention: One would use components already created for Freedom to put an operational station in orbit with just four launches (see illustration)—or with a single launch of Russia's huge Energia rocket. Essentially an abbreviated version of the original design, Aldrin's outpost would be one-third of the original station's size.

Aldrin foresaw the agreement between the United States and Russia for a joint space effort and designed the station to be "flown" to the Russian space station Mir for docking using hydrazine propulsion. The two stations can be joined and separated at will, with the Russian Soyuz TM capsule also serving the American station for emergency escape.

FOUR EASY PIECES



Should NASA scrap the current space station design, Aldrin has a second alternative: an original and patented design that could be up and flying in as few as two shuttle launches. His concept uses a modified shuttle external tank for living quarters, similar to the way Skylab used the remodeled second stage of a Saturn rocket. Surrounding the quarters is a cuboctahedral framework, which may be difficult to pronounce but would be easy to assemble in space. The shape resembles a pyramid with its top sliced off. Two of these shapes, with their broad bases at opposite ends, form a strong external skeleton. The design calls for Tinkertoy-like joints that allow for a wide range of options.

"I never thought I would become an expert at what the space station ought to be. It just gradually happened," says Aldrin. During the Gemini and Apollo missions, he played a key role in developing rendezvous techniques for spacecraft, a labor that earned him the nickname "Dr. Rendezvous" from his compatriots in the astronaut corps. It's a title that he still lives up to. "I'm trying to contribute to Mars orbit trajectories and come up with better strategies for getting us to Mars," he says in a mellow baritone voice. "There are many conditions that would lead a person to want to settle there and explore the surface."

In Aldrin's mind, space is still the frontier where American trailblazing spirit can find new expression. "It's selfish to say that we as a nation should be leaders. But we should strive to do the best. We grew up in this pioneering world in this country with an innate desire to extend our reach and our capabilities. It's in our blood." PS

MARIO FERRO

GLORY DAYS

Neil Armstrong may have earned the distinction of being the first man on the moon with a *prepared* speech, but Buzz Aldrin was just a few minutes behind him when he stepped onto the surface of the moon and uttered his completely *unrehearsed* response: "Magnificent desolation."

The way Aldrin tells the story, there wasn't much time to enjoy the moon. "It was a burden," he says of the distinction of being one of the first men on the moon. "It was like the little fifth grader who has to recite the Gettysburg Address in the school auditorium. The kid walks up there, and later he doesn't remember what happens. Hopefully, he can get the thing out. That's because of the pressure of being on stage. It sounds strange, but to me, we were on stage on the moon, and the whole world was listening, watching, observing, critiquing . . . to me, that's pressure."

Desolation remains Aldrin's chief impression of the moon's surface. "Where we went was intentionally selected to be the smoothest, most uneventful place you could possibly go to," he recalls. "As you stand there and look out, it's clear, and then it curves away about a mile distant. Now, that's not flat, that's not Kansas where the horizon disappears 20 miles away. There was no doubt that we were on a sphere. There would be no flat-moon society."—*S. F.*