form and evolve. The star Winget and Nather chose should be particularly interesting in that regard because it is not yet a full-fledged white dwarf. It is still nearing the end of its birth process: the collapse of a red giant that has spent its nuclear fuel. At the same time, though, the star should be mature enough to offer astronomers a glimpse into the bizarre state of matter believed to lie within white dwarfs.

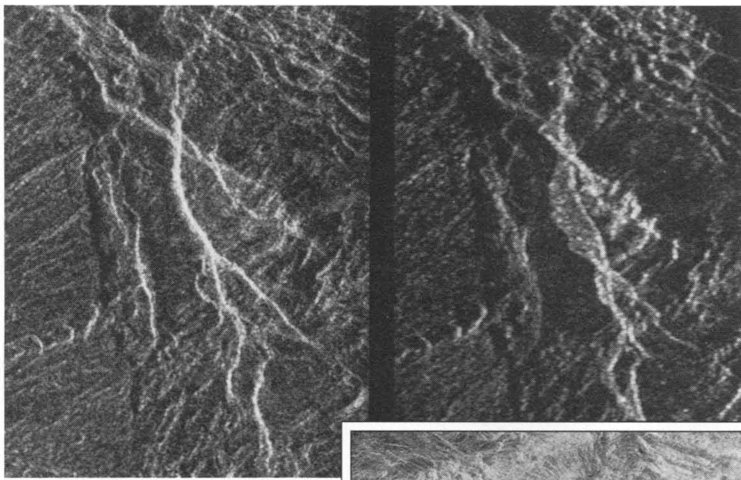
Theory has it, says Caltech astronomer Jessie Greenstein, that under the thin outer crust of a white dwarf, its intense gravity crushes its very atoms, squeezing electrons down into the nuclei—a state of matter referred to as degenerate. As a dwarf ages, he adds, it cools by pouring out light and neutrinos until the core "freezes" into something like a single crystal of degenerate matter. Astronomers and physicists are thrilled at the prospect of confirming this theoretical picture through Winget and Nather's measurements. "Asteroseismology for white dwarfs is exciting as a proof of degeneracy," says Greenstein.

In case the initial round of data doesn't satisfy the theorists, Winget says he already has two more dwarfs "in the bag"—their frequency spectra are now under analysis. And the global telescope network, he says, is now aimed at still more stars. Within three years, he expects to have frequency profiles on a sizable handful of white dwarfs.

Besides answering questions about the stars themselves, he says, data on multiple white dwarfs could lead to a new estimate for the age of our galaxy. Measurements of the density and internal structure of dwarfs will reveal their cooling rate. Knowing their maximum possible temperature, astronomers can use the cooling rate to set a limit on their age—which, for the oldest white dwarfs, should correspond to the age of the galaxy itself. "The history of the universe," says Nather, "is written in these dead stars."

Meanwhile, some other astronomers are tuning in to the vibrations of other types of stars. Caltech helioseismologist Kenneth Libbrecht says he is launching a project to monitor the more subtle oscillations of ordinary sun-like stars. Hugh Van Horn at the University of Rochester says he is seeking out pulsations in brown dwarfs and neutron stars. But both Libbrecht and Van Horn agree that, for the moment, the white dwarf work is the hottest thing going in asteroseismology. ■ FAYE FLAM

Venus Caught in a Geologic Act?



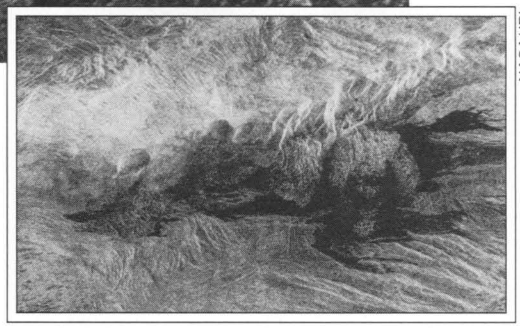
Before and after. *The bright line marking a scarp* (far left) *jumped back, leaving a debris pile* (left).

NASA/JPL

The stunning images of Venus returned by the Magellan radar mapper during the past year seemed to portray a geologically living planet: Mountainsides appeared too steep, the fracturing of impact craters too pervasive, and lava flows too pristine to be the ancient products of long-spent geologic forces. But because those images were only snapshots, they certainly didn't prove the case for a geologically active Venus; they might look like "freeze-frame" pictures of a surface in constant turmoil, but they could instead be portraits of a now dead landscape. But now comes proof of life.

Magellan scientists think they may have detected a very recent change in the surface, and a big one at that. The spacecraft recently embarked on a second mapping cycle, which is giving it a new look at some previously mapped terrain. On the rugged equatorial highlands of Aphrodite Terra, this second pass has revealed what appears to be the jumbled debris of a landslide that was not there when Magellan passed overhead just 8 months earlier. Venus, it seems, is indeed alive.

As often happens when planetary scientists are inundated with new observations, the discovery of the Venusian landslide was a bit of serendipity. Jeffrey Plaut of the Jet Propulsion Laboratory wasn't looking for surface changes at all. Instead, he was testing a method for making a stereoscopic view of Venusian terrain by combining images taken at slightly different angles. But when Plaut tried to combine two images of a steeply scarped plateau, taken on separate passes 8 months apart, they wouldn't merge. Something had changed.



NASA/JPL

All in a row. *At least three debris aprons fan out from a bright highland.*

What was different in the latest image was a 7.5-kilometer-long pile of rock at the foot of the scarp, which now is cut farther into the plateau. Apparently, a cubic kilometer or so of plateau edge had slid into the adjacent trough. That puts the slide in the same class as the avalanche of debris that tore away the north face of Mount St. Helens in 1980—the largest landslide on our own planet in historical times.

What caused the Venus slide remains unclear. No volcanism is evident, and erosional undercutting seems unlikely. That leaves some slow uplift that pushed the plateau edge toward instability, perhaps with the help of a "Venusquake." The clear implication is that Venus was geologically active this year, not just in the geologically recent past.

There is, however, one lingering doubt about this Venusian landslide, says Plaut. Some team members have suggested that the change could conceivably be an illusion. Radar images may look like photographs, but the underlying processes are quite different (*Science*, 1 March, p. 1026). For example, modest changes in radar viewing angle can drastically change the appearance of an image. The test may come when Magellan passes over the same spot in another 8 months, Plaut says—or it could come sooner, if apparent changes show up elsewhere. After all, Plaut was dealing with only a few scenes from a randomly selected strip of images that covers less than 0.5% of the planet. Either he was extremely lucky, or more changes in the Venusian landscape are waiting to be found. ■ RICHARD A. KERR