

# FIRST WORD

## THE SEARCH FOR EXTRATERRESTRIAL INTELLIGENCE:

The goal is to answer age-old philosophical questions about ourselves

By Frank Drake

**F**rom a distance, at twilight, you might almost mistake them for human. I suspect they'll have their heads on top, as we do, and walk upright, but I hope that intelligent extraterrestrials have four arms instead of two. Two aren't enough, in my opinion.

My scientific colleagues raise their eyebrows when I speculate on details of appearance, but 99.9 percent of them agree that

listen for intelligent signals from two nearby stars.

With the marvelous technological advances of recent years, we could repeat Project Ozma today in a fraction of a second. We could scan a *million* stars or more at distances of at least a *thousand* light-years.

And we will. Such a search is planned, funded, and ready to begin operations this month—the long-awaited NASA SETI Microwave Observing Project.

Until the late 1980s, our inability to find another civilization simply meant that we had not looked long enough or hard enough. Failure to detect alien intelligence in no way proved that extraterrestrials did not exist. Rather, our efforts were puny in relation to the enormity of the task.

Then, many people began to grasp the nature of the challenge, the investment required to succeed, and the importance of success to all humanity. They pushed for a serious search—and won. NASA committed \$100 million to a mission spanning the 1990s. Its outcome is likely to be the imminent detection of signals from an extraterrestrial civilization. This discovery, which I expect to witness by the year 2000, will profoundly change the world.

In all likelihood, any civilization we can detect will be more advanced than our own. But unlike the primitive civilizations on Earth that were overpowered by more advanced technological societies, we need not fear being exploited or enslaved. The extraterrestrials aren't going to come and eat us; they are too far away to pose a threat. Even back-and-forth conversation with them is improbable, since radio signals, traveling at the speed of light, take *years* to reach the nearest stars and many *millennia* to get to the planets of stars where advanced

civilizations may reside. One-way communication is likely, however.

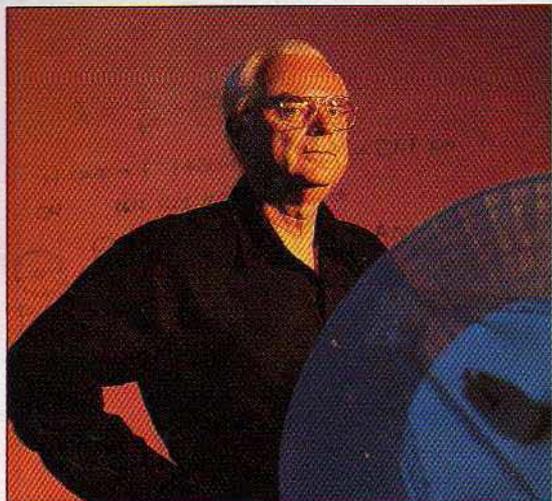
Just as our radio and television broadcasts leak into space, carrying news of our existence, transmissions from planets of other stars may have been arriving at Earth for billions of years. Some may even be intentional messages regarding alien culture, history, and technology. Many encyclopedias' worth of information could be transmitted (and received) easily and cheaply.

Though SETI science concerns antenna diameters and signal frequencies, the goal of the searching is to answer age-old philosophical questions about ourselves—Where did we come from? Are we unique? What does it mean to be human?

Such thoughts led me to attempt Project Ozma, risking my professional reputation and future employment, even public ridicule. At that time, no scientist talked seriously about extraterrestrial life. As a beginning astronomer, I'd discovered Van Allen radiation belts around Jupiter, created radio maps of the Galactic center, and measured Venus's temperature via its radio spectrum, but I had a long way to go before my career was secure.

Project Ozma failed to detect extraterrestrial intelligence but succeeded in demonstrating our group's commitment to SETI. It also portrayed SETI as a legitimate, do-able, scientific endeavor. And it stimulated activity among others who shared our interest but had lacked the means to search.

The NASA SETI project culminates the quest that Ozma started. According to the Drake Equation, approximately 10,000 advanced extraterrestrial civilizations share our Milky Way galaxy. Any one of them should have something of supreme importance to tell us. **□**



**This article is excerpted from a new book, *Is Anyone Out There?*, by Frank Drake and Dava Sobel, published this month by Delacorte Press. Drake is professor of astronomy and astrophysics at UC-Santa Cruz, and president of the SETI Institute in Mountain View, California.**

other intelligent life forms exist—and that large populations of them may infiltrate the universe.

Personally, I find nothing more tantalizing than the thought that radio messages from alien civilizations in space are passing through our offices and homes, right now, like a whisper we can't quite hear.

I have tracked those radio signals for more than 30 years in the search for extraterrestrial intelligence (SETI). I engineered the first modern search in 1960 at the National Radio Astronomy Observatory in Green Bank, West Virginia. I named it "Project Ozma." For two months I used what we now consider crude equipment to