

ew! Astronomy Education Newswire * Saturn at Opposition, Moon in Eclipse * Astropyrotechnics

Mercury

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life on mars?

misery. This seems like a good time to look at some facts:

- + If the nearest extraterrestrials lived only as close as the nearest small galaxy, humanity would not make physical contact in the next 100,000 years.
- + If there were a civilization as close as 100 light-years, the Galaxy would be swarming with intelligent life. The chances of the nearest civilization being close to us, with none anywhere else, must be incredibly small.
- + At 50 light-years, our old AM and FM signals are swamped by white noise. I have read that our presence has been broadcast better by the detonation of nuclear bombs.
- + Faster-than-light travel is a mainstay of science fiction because the distances in real space are so vast that any good story would be severely constrained by a speed limit. But just because we can imagine something doesn't mean it can be accomplished.

One thing I haven't noticed much attention to is the prospect that we are the first advanced civilization in this galaxy. Somebody has to be first; we certainly are the first advanced civilization on this planet. Why isn't it acceptable to be the first in the Galaxy, too?

I confess I am convinced our galaxy is swamped with life-supporting planets — and life. But it seems that life hasn't discovered electromagnetic communications yet. If chance has as a large a role to play in evolution as biologists suspect, life is everywhere but only once has intelligence arisen.

DAVID DAVIS
Oxnard, Calif.

Seth Shostak replies:

Davis implicitly states a common argument against the extraterrestrial nature of UFOs, namely that interstellar travel times (at least as measured by those not aboard the craft) are untenably long. To cross half the Galaxy would take at least 50,000 years, and it is hard to believe that an advanced society would do that merely to perplex us with lights in the sky.

Yet Davis also seems pessimistic about SETI, mistakenly claiming that our earthly broadcasts will disappear into a sea of noise at 50 light-years' distance. Our TV and radar signals would be readily detectable at such distances, given a large enough antenna, and unlike the

occasional nuclear test, these transmissions are occurring 24 hours a day.

The more substantive part of Davis's argument concerns the prevalence of intelligent life. Could it be that the Galaxy teems with life, but we are the first creatures smart enough to build radio transmitters? Compare this to the situation of a 10-year-old whose family has just moved. Yes, he's the new kid on the block. Might he also be the *first* kid on the block? If the block consists of houses that have been around for 30 years, that's unlikely. The Galaxy, our block, is two to three times as old as Earth. To think that we are the first and only sentient beings in its vast expanses smacks of a hubris that dwarfs even that of Ptolemy's followers, who held that our planet was the center of creation.

Slow Down

I enjoyed reading your SETI report in the March/April issue. I did, however, notice some errors in the article by Ben Bova ("Where Are Their Starships?" p. 26).

First, it would take more than a few months at 1 g acceleration to reach 95 percent of the speed of light. Without the effects of relativity, it would take almost a year. Relativity would lengthen this time to almost two years for those in the spaceship and almost three years for those on Earth.

The article further claims that the spaceship, traveling at 95 percent of the speed of light, would take only 20 years (from the traveler's vantage point) to traverse the 1,000 light-years to Polaris. Actually, the trip would take well over three centuries. Those on Earth would see the trip take over 1,050 years. The reason that the trip would take less time in the starship is *not* time dilation, for the travelers could not travel 1,000 light-years in less than 1,000 years. The reason is that, as seen by the speeding travelers, the distance between Earth and Polaris would contract to 312 light-years. In order to make the trip in 20 years, the starship would have to travel at 99.98 percent of the speed of light.

The same error occurs in the statement that a starship traveling within our galaxy at nearly the speed of light would move a few degrees per year. In fact, no object can move faster than the speed of light when viewed from *any* reference frame. Any object moving at least a degree per year must be less than 57.3

light-years from Earth. The famous cases of apparent superluminal motion are optical effects and do not involve the motion of matter at speeds greater than c .

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Update on Extrasolar Planets

Laurance Doyle of the SETI Institute reports to us that his article on planet searches ("In the Wink of a Star," July/August, p. 20) has inspired several amateur astronomers to join the hunt for planets. The article discussed the "Transit of Extrasolar Planets" project, currently checking for new worlds in the CM Draconis binary star system. In late June, the project reported the apparent detection of a planet 85 percent the diameter of Jupiter — a discovery independently made by Ed Guinan and his colleagues at Villanova University. The discoveries are tentative and have yet to be confirmed.

Doyle says he would like to correct a few errors in the article. First, optical interferometers are not needed to apply the astrometric method of planet-searching, although they help. Second, the TEP project does not require the long-term monitoring of several thousand stars; it has, in effect, selected stars around which planets would make their presence or absence known quickly. Third, although a planet between the size of Earth and Neptune would dim CM Draconis by 0.6 percent, an Earth-size planet would dim the system by only 0.08 percent.

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