

"Daddy," asked 10-year-old Paul, "how lang is forever?"

"Forever is, well, forever is, well it's forever," Daddy grunted.

"But," persisted Paul, "just how long is it?"

"How do I know, stupid," Daddy was about to shout but stopped in time. A crack like that again, he mused, and Paul might become as stupid as Daddy. Anyhow, he knew Paul would keep at it until he got some kind of answer because he was on an "encourage-the-kid" kick right now. For weeks he had been using every chance he had to tell Paul that he'd make a good newspaperman some day "just like me."

Newspaperman, newspaper, that's it, Daddy grinned. The papers are full of Sputniks, Explorer, Shoot the Moon, Space Age, and so forth. Maybe I can gimmick up something that will satisfy him, at least for now. So he went from there.

You know, Paul, we're in a new age--the Space Age. Rockets travel at 18,000 miles an hour and circle the earth hundreds of mile up. You know that's close and yet it's so far awgy, especially when you remember that the best airplanes go up only a few miles.

Well, here's a story I saw recently that didn't make the splash that Sputnik and Explorer made, but it might help. Out in Columbus, at Ohio State University, a Dr. John D. Kraus is one of the world's leaders in a new science called "radio astronomy."

Astronomy, you know, is the oldest of the sciences. It goes way back before the time of Christ. Astronomy gave us our calendar, our method of keeping time, prediction of eclipses. The laws of mechanics are founded on Newton's studies of the motions of planets. Even the earth itself was explored and mapped with the help of celestial navigation, and the principles of relativity and nuclear physics owe their existence to astronomical considerations.

From astronomy, for instance, we learned that the earth is not the center of the solar system as many once believed. The sun is not the center of our galaxy but near its edge. The earth, astronomy proved, is just a grain of sand on a beach that has no end.

Radio astronomy tells us even more startling facts about all that space up there. It got its start back in the depression days of the '30s. A radio engineer at the Bell Telephone Laboratories, a man named Karl G. Jansky, was working with a rotating antenna. He wanted to know where static was coming from on the short waves.

In the absence of accountable static, Jansky found some coming from a spot in the center of our galaxy. Later another radio engineer, Grote Reber, built the first radio telescope in the backyard of his home at Wheaton, Ill. He made the first real study of radio waves coming out of space.

(Circled signature)

Then a lot of people in this country, Australia, and England became interested, including Kraus. Kraus had already become famous for designing short-wave and television antennas that are being used all over the world. In 1951 he started building an antenna which now has 96 spiral rods, ^(SOMETHING LIKE BEDSPRINGS) called helices, reaching heavenward from a steel framework 160 by 22 feet. This pivots on an east-west axis.

With this giant radio telescope, Kraus and his crew have picked up signals from Cygnus A. Cygnus A is two entire Milky Ways in collision at a distance of 200 million light years.

Now, Paul, a light year is the distance it takes light to travel in one year. Light moves about 186,000 miles in one second. Too fast, to understand, isn't it Paul? Well, Sputnik and Explorer went around the world in about 90 minutes. They were travelling roughly 18,000 miles an hour, or five miles a second. Light moves not 300, not 3,000 but 30,000 times that fast! Beginning to get the idea, Paul?

Kraus' telescope picked up waves 200 million light years away. How far is that? ~~It's a long way~~ In one year, light travels six trillion miles. In 200 million years it will travel, in miles, some 200 plus six sets of triple ~~zeros~~ zeros!

Now Kraus is building a super telescope measuring 2,000 feet across instead of 160 and 200 feet high, instead of 22. His theory is that the bigger the antenna the farther it will go. In short, he is convinced that even radio astronomy hasn't touched the skirts of heaven. He figures 200 million light years is close.

And 200 million light years is only a speck in eternity. There, Paul, does that help?

"That's great, Daddy, just great," Paul enthused, then added:

"But how long is forever?"

1