

A Vacuum Cleaner for Destroying Space Junk



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Senior software engineer Jon Richards shows data collected by the Allen Telescope Array at the SETI Institute in Mountain View, California, last April

JIM TEDDER: I'm Jim Tedder.

CHRISTOPHER CRUISE: And I'm Christopher Cruise with EXPLORATIONS in VOA Special English. Today, we tell about an effort to destroy unused spacecraft and other objects floating high above the Earth. We also have news about SETI -- the Search for Extraterrestrial Intelligence.

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JIM TEDDER: It just may be the world's most costly vacuum cleaner. The price of CleanSpace One is eleven million dollars. But yet, it has a big job to do. Recently, researchers in Switzerland announced plans to build this new cleaning device. The researchers work at the Federal Institute of Technology in Lausanne.

CleanSpace One will not be for use in homes or businesses. It will be shot into space to help remove the thousands of pieces of space junk floating around up there.

CHRISTOPHER CRUISE: Last year, we reported on the problem of space junk. Over time, many unused spacecraft have hit each other far above the Earth. Big

pieces break into thousands of small pieces. Sometimes they fall back into the atmosphere and burn up. But when they do not, it creates big problems.

Scientists fear that if something is not done to remove these objects, it may soon become too dangerous to send people and machines into space. There is a large chance that they might crash into some of this junk. So that is why the Swiss researchers are developing the new device.

JIM TEDDER: CleanSpace One is not really a vacuum cleaner. It will not be used to take away space junk. But scientists plan to move it close to an old satellite that is no longer being used. Then a claw-like instrument will seize the satellite, and force it back through the atmosphere. There, the satellite will be destroyed by the heat of friction with the air.

Researchers say that all they need to do is slow down the speed of some of these unwanted objects. Once these items begin to move more slowly, they will fall back to Earth. There is little chance that they will fall through the atmosphere and harm the people or things below. Some space junk has returned to Earth, but it usually causes no harm as it falls into the ocean.

CHRISTOPHER CRUISE: The American space agency NASA and scientific organizations in other countries know that space junk is a serious problem. They are tracking the movement of over twenty thousand unwanted items circling the Earth. Some people have suggested using lasers to push the items into a lower and slower orbit.

NASA recently gave money to a South Carolina company that hopes to make a device called Eddy. That is the short name for ElectroDynamic Debris Eliminator. Eddy would work like the Swiss space cleaner. But it would use a net to catch an old satellite like a fish before sending it back through the atmosphere.

JIM TEDDER: John L. Junkins is an aerospace engineer with Texas A and M University. He says we need to remove five or six large space objects each year to stop what he calls the cascading effect. That is what happens when large objects, some as big as a bus, crash together. When they break apart, they create thousands of smaller parts that continue floating around the Earth. Professor Junkins says we would need to remove ten large pieces of space junk each year to stop the damage they might cause.

(MUSIC)

CHRISTOPHER CRUISE: While some scientists are watching things circling the Earth, others are searching the sky for something that is not made by humans. SETI -- the search for extraterrestrial intelligence -- is back on the job. But the

question is: for how long? SETI has been searching the stars for nearly thirty years. But its scientists say the group has never had enough money. Last year, SETI suspended operations for a time. But the general public and some very wealthy people have given enough money to re-start the project.

JIM TEDDER: In February, SETI scientists began asking the public to help them with their research. The scientists are using a website to re-direct radio signals over the Internet. They have asked the public to use home computers, and their ears, to search for anything unusual. They hope the human brain can find things that their automated equipment cannot.

SETI's telescopes and computers examine many different radio frequencies every day. But they ignore some frequencies because there are just too many radio signals in the air at any one time. The scientists hope that home computers will find an unusual sound "hidden" within sounds made by the technologies we use every day. In other words, they think that an alien radio signal might be covered up by the powerful signal of a local radio station.

CHRISTOPHER CRUISE: Much of SETI's work involves the Allen Telescope Array - over forty radio telescopes located in northeastern California. Scientists there point the circular antennas at an area of the sky called Cygnus. They are hoping to hear some signal or noise that is being sent into space by intelligent life. They hope to answer perhaps the biggest scientific question: are we alone in the universe? The area of the sky being searched seems large. But it really is a small part of the whole universe.

JIM TEDDER: For many years, researchers thought our solar system, the sun with Earth and the other planets, was a very special place. But that has changed. Researchers now believe there are billions of stars like our sun with planets orbiting around them. They also think that many of these planets are able to support life as we know it.

Long before SETI, an astronomer named Frank Drake began searching the skies for radio signals. In nineteen sixty, he worked at the National Radio Astronomy Observatory in West Virginia. He is almost sure that we are not alone. Using a mathematical model he created, he estimates that there are ten thousand places in our part of the universe where life exists.

(MUSIC)

CHRISTOPHER CRUISE: After looking at millions of stars and listening to radio noise for many years, have scientists ever found anything that suggests there is intelligent alien life? The answer is: maybe. It happened one night in nineteen

seventy-seven. A large radio telescope in Ohio heard something that made the scientists say, "Wow."

The telescope was connected to a computer and a printer. The gathered information usually showed a series of low numbers, ones, twos, and threes. That meant that all the device was hearing was low level "background" noise, similar to the sound you hear when you set your radio between stations. But suddenly, something surprising happened. For a little over one minute, the noise level rose to a level thirty times what was usually heard. For seventy-two seconds, it appeared to some that our distant space brothers and sisters had finally said, "Hello." When Jerry Ehman, a SETI scientist saw what the printer had produced, he drew a circle on the page in red ink and wrote, "Wow."

JIM TEDDER: But just as suddenly as the signal had started, it stopped. And it has never been found again. So, what was it? What might it have been? Those questions have been on the mind of Robert Gray for years. He is an astronomer who recently finished work on a book called "The Elusive Wow." He says that the information gathered in Ohio in nineteen seventy-seven looks exactly like a radio signal. He also says it is not likely that an airplane or a satellite was the cause.

Mr. Gray found that the "Wow" signal was very close to the number of vibrations per second of hydrogen when it gives off light. Hydrogen is the most common element in the universe. So some scientists think an intelligent alien would use its "glow frequency" as a radio signal. But why did the signal suddenly appear and then just as quickly disappear?

CHRISTOPHER CRUISE: Robert Gray calls that the "lighthouse effect." If you were on a ship at sea and saw a lighthouse beam in the distance, it would appear to come and go across the night sky. It would not stay in one place. Mr. Gray says that might describe what aliens would do. They would sweep a radio signal to different parts of the sky, rather than just send it to one place. That way it might be seen, or heard, by more telescopes in many different places.

Mr. Gray thinks that in a hundred years, scientists will have far better equipment to examine the distant stars. We might be able to look at the entire known universe at one time instead of just examining such a small part of it. That should increase the chances that we will hear from our distant neighbors -- if they are out there.

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CHRISTOPHER CRUISE: I'm Christopher Cruise.

JIM TEDDER: And I'm Jim Tedder. Join us again next week for more EXPLORATIONS in VOA Special English.