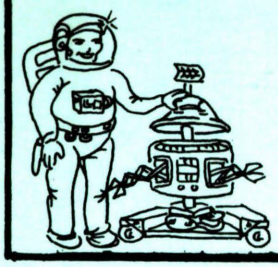
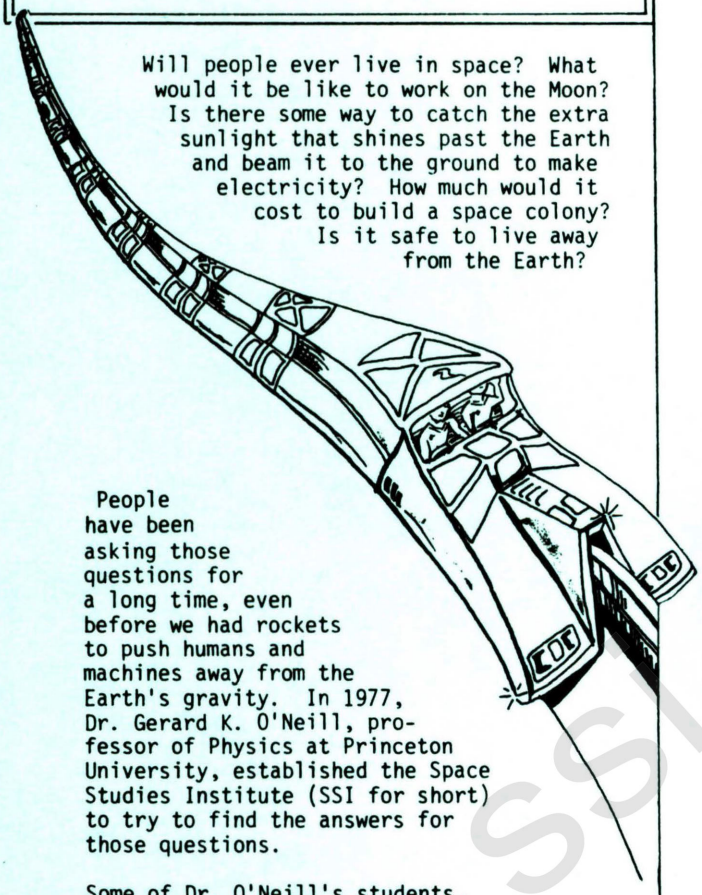


SPACE STUDIES INSTITUTE

All About SSI

Will people ever live in space? What would it be like to work on the Moon? Is there some way to catch the extra sunlight that shines past the Earth and beam it to the ground to make electricity? How much would it cost to build a space colony? Is it safe to live away from the Earth?



People have been asking those questions for a long time, even before we had rockets to push humans and machines away from the Earth's gravity. In 1977, Dr. Gerard K. O'Neill, professor of Physics at Princeton University, established the Space Studies Institute (SSI for short) to try to find the answers for those questions.

Some of Dr. O'Neill's students, working on a project to see if space colonies could be built, discovered that it WOULD be possible! Using soil and rocks from the Moon, and energy from the Sun to run a kind of electric motor called a mass-driver, people could build factories and cities in space. They could assemble large satellites to collect sunlight in space and send it back to Earth as electricity.

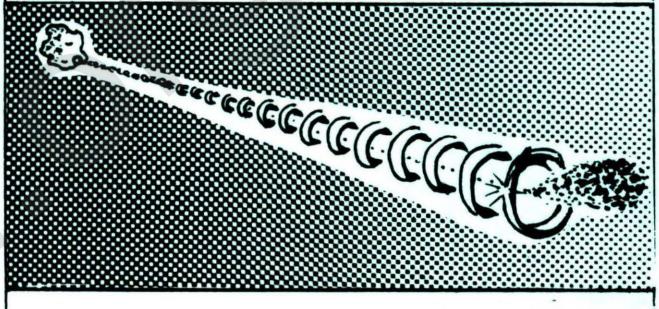
SSI is working on projects to help get people into space. It is building models of the mass-driver to test, and supports research in chemistry, finding new ways to break lunar soil down for the oxygen and metals for people to use. People all over the world contribute to the Space Studies Institute, opening the resources of space for all of us.

Fun--Facts---

WHAT IS A MASS-DRIVER?

A mass-driver is a kind of electric motor used to launch things from the Moon. Space colonists will use the mass-driver to get Moon rocks and soil out to factories in orbit. Aluminum and magnesium mined from the ore will be used for building space ships and satellites. Oxygen will be taken out to make space colony atmospheres and fuel.

A completed mass-driver will look like doughnuts standing on edge, in a row a little longer than a football field. Each



"doughnut" will be a coil of wire with electricity running through it (an electromagnet). The payload will be a small clump of material about the size of a baseball. The electromagnets will pull it through the centers of the "doughnuts" accelerating it to more than 5000 miles per hour, and throwing it into space, ten launches every second.

Here is an experiment for you to make your own electromagnet.
Materials: 1½ ft. bell wire (strip ends), pencil, big 6-volt battery, iron filings, compass.
Directions: Leaving a few inches of tail, wrap the wire around the pencil about 20 times, and connect the ends to the battery terminals.
Experiment: Hold the spiral wire over the iron filings. What happens? Now check to see where the north and south poles of your magnet are by holding a compass close to each end. The compas will point to the south pole. What happens if you have two magnets, with south poles together?

Have you ever seen a falling star? Those little streaks of light in a dark night are not really stars shooting across the sky, of course. Scientists call them "meteors."

Meteors are really tiny bits of dust and rock in space, most no bigger than your little fingernail. Sometimes they come close enough to be caught by our gravity.

As the particle is pulled toward the ground, the air molecules rub against it, faster and faster. The bit grows hotter and hotter until it glows red hot and we can see it.

Any night that is clear you'll be able to see about seven meteors during an hour.

But on certain nights they seem to rain from the sky in "meteor showers." Sometimes you can see 50 in one hour!

Meteor showers occur when the Earth passes through the trail of dust pieces left by a comet as it orbits the Sun. Standing on Earth and looking into space toward where the comet came by, we usually see a constellation that gives its name to the meteor shower, because it seems that the meteors fall from that spot.

Here are some good showers to see:

Perseids: Aug. 12 Geminids: Dec. 13
Orionids: Oct. 21 Quadrantids: Jan. 3

The Space Studies Institute gets letters from people of all ages. They want information, or to ask questions. Some of the letters below may answer some of your questions. If you would like to subscribe to the SSI Update newsletter, send $10. in US check or money order to: SSI, P.O. Box 82, Dept. C, Princeton, NJ, 08540. Keep up with space news!

Dear SSI, I watched the first launch of the Space Shuttle on TV. Can you send me a picture of the Shuttle and some more information? Sara M., Bath, NY.

Dear Sara: The Space Shuttle is handled by NASA. To get information, write to: NASA Public Affairs Office, Code PA-EPS, Kennedy Space Center, FL 32899.

Dear SSI, How many moons does Saturn have? How many rings? Phillip K., Englishtown, NJ

Dear Phillip: Before Voyager missions flew by Saturn, we had found nine or ten satellites and what looked like three rings. Voyager 1 showed us more moons (for a total of 17) and that the flat rings were really hundreds of tiny "ringlets." Voyager 2 took close-up pictures of some of Saturn's moons and rings, and sent back more information. It will be months before scientists work through it all!

The Astronomical Society of the Pacific is selling Saturn pictures and slides. Write: Saturn Encounter Photos, A.S.P., 1290 24th Ave., San Francisco, CA 94112.

BOOKS ABOUT SPACE AND MAGNETS FOR MORE INFORMATION

Colonies in Space: The Next Giant Step, by Frederic Golden, Harcourt Brace, Jovanovich, New York, 1977.
Experiments in Magnetism and Electricity, by Harry Soutin, W. W. Norton and Co. New York, 1962.
Man's Reach For The Stars, by Roy A. Gallant, Doubleday and Co., New York, 1971.

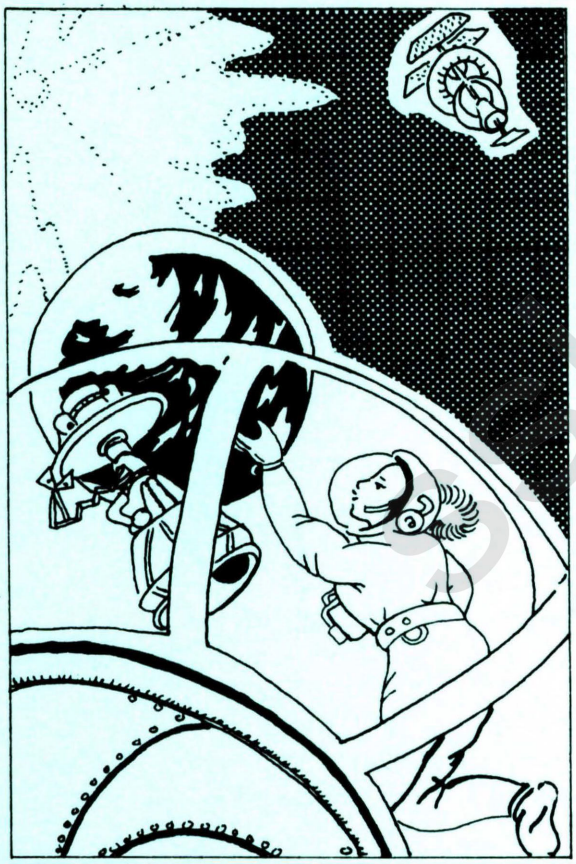
SPACE MAZE ANSWERS: 1. launch, 2. Moon, 3. oxygen, 4. colony, 5. aluminum, 6. satellites, 7. electromagnet, 8. mass-driver, 9. SSI, 10. Sun, 11. orbit, 12. comet, 13. meteors.

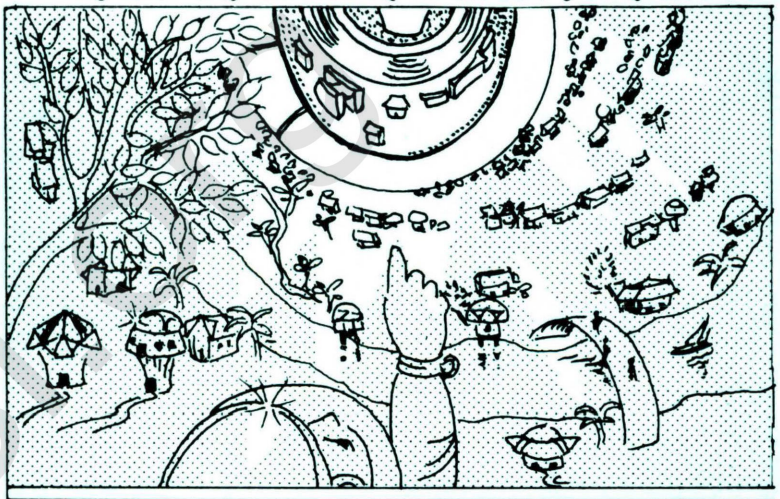
Celestial Adventure

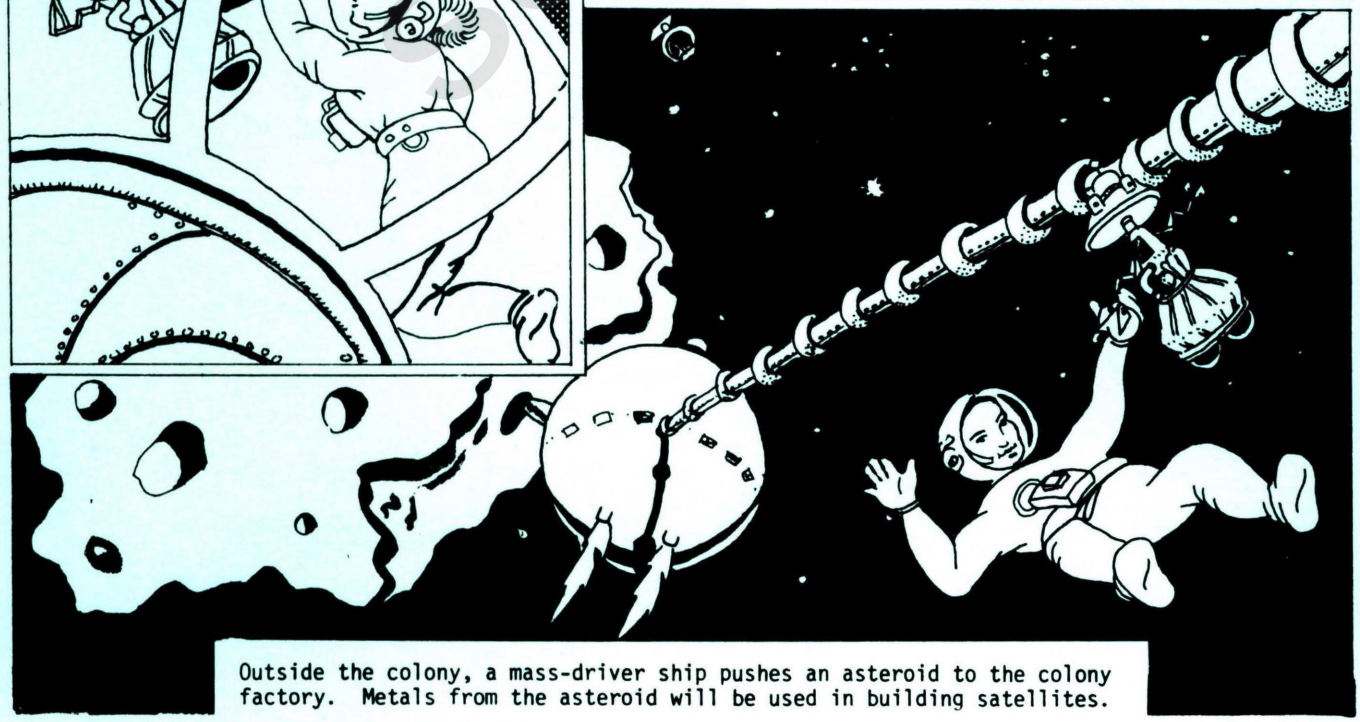
With Astro-Alice AND E-CON

Alice and E-con board a Shuttle for the three day trip to Island One. Settlers on the colony build satellites.

Island One is a beautiful place. "It seems funny to see this whole town inside a ball," says Alice. "The colonists must like living here. They can even fly in the zero-gravity section."

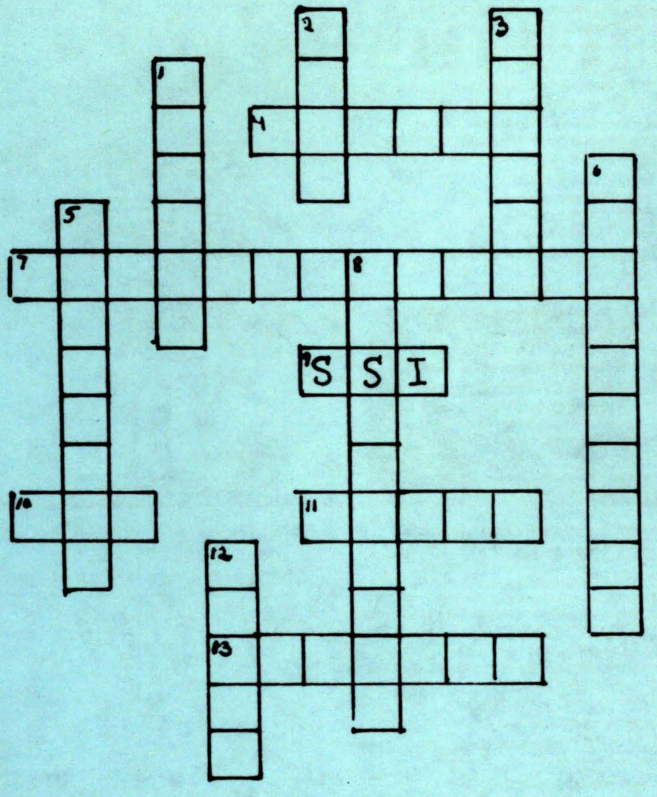






Outside the colony, a mass-driver ship pushes an asteroid to the colony factory. Metals from the asteroid will be used in building satellites.

SPACE MAZE



The words in this puzzle are all from the articles you have read in this paper. Write the words in the boxes. Number 9 has been done for you. Answers are on page 2.

DOWN

1. The mass-driver will ____ payloads.
2. Earth's natural satellite.
3. You breathe it in colony atmospheres.
5. A metal from lunar ore.
6. Space colonists will build ____.
8. An electric motor for lunar launches.
12. Particles from its path make meteor showers.

ACROSS

4. Where people will live in the future.
7. You make one in the Fun Facts experiment.
9. Short for Space Studies Institute.
10. Our star.
11. The path of the Earth around the Sun.
13. ____ are sometimes called "falling stars."

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