

by Scott\_LaFee

## VERBATIM

**ELECTRON INK** - The AEGIS survey is an expansive effort to visually explore and map the visible universe, using an array of observatories. Check out the project at [www.aegis.ucolick.org](http://www.aegis.ucolick.org). CNS Photo.

**KNOT A PROBLEM** - Scientists remain puzzled by knots. Science, it seems, can't yet explain why garden hoses and Christmas lights invariably seem to get tangled. CNS Photo.

**WHERE IN THE WORLD?** - The Nardo Ring is a 7.7-mile racecar test track in rural southern Italy. CNS Photo. Pollution is nothing but resources we're not harvesting.

- American Inventor and writer Buckminster Fuller (1895-1983)

## BRAIN SWEAT

Translate these letters.

1. DEEF

2. S U I T

3. Lase

## ELECTRON INK

AEGIS survey

[aegis.ucolick.org](http://aegis.ucolick.org)

The AEGIS survey is an expansive effort to visually explore and map the visible universe, using an array of observatories, from Palomar in San Diego County and Keck in Hawaii to the Hubble, Chandra and Spitzer space telescopes. You can check out the often stunning results [here](#).

## SURELY YOU'RE JOKING

Two not very bright biologists were in the field. While following a game trail, they came across a pair of tracks.

"Those are deer tracks," declared the first biologist.

"No, they're definitely moose tracks," cried the second.

The two biologists launched into vigorous debate. They were still arguing when the train hit them.

## BRAIN SWEAT ANSWER

1. Feedback

2. Spacesuit

3. Argon laser (the "r" is gone)

## ANTHROPOLOGY 101

In England, clay from a parson's grave was thought to be good for curing a variety of ailments. It was taken internally after being boiled into a soup.

## KNOT A PROBLEM

The subject may not rank up there with, say, dark matter or the origins of life, but scientists remain puzzled by knots. Science, it seems, can't yet explain why garden hoses and Christmas lights invariably seem to get

tangled.

But if the why remains a mystery, some new research at the University of California San Diego offers clues to the how.

Knot theory is a branch of mathematics that uses formulas to distinguish and describe various kinds of knots. Mostly, it's an intellectual exercise dealing in abstractions. The UCSD work is more tangible. Douglas Smith, an assistant professor of physics, and research assistant Dorian Raymer placed a length of string inside a plastic box spun by a computer-controlled motor. The string tumbled like clothes in a dryer, usually forming a knot within seconds. Smith and Raymer repeated the experiment more than 3,000 times, varying the length and stiffness of the string, the box size and the rotation speed.

"It's virtually impossible to distinguish different knots just by looking at them," said Raymer. "So I developed a computer program to do it. The computer program counts each crossing of the string. It notes whether the crossing is under or over, and whether the string follows a path to the left or to the right. The result is a bunch of numbers that can be translated into a mathematical fingerprint for a knot."

Smith and Raymer then concocted a simplified model for knot formation. The string, they said, forms concentric coils, like a garden hose, due to its stiffness and confinement in the box. The free end of the string then weaves through the coils, with a 50 percent probability of going under or over any coil. Computer simulations verified the results recorded in experiments.

Knowing this, of course, won't prevent tangled garden hoses or Christmas lights, but at least you now understand how it probably happened. Or knot.

WHERE IN THE WORLD? ANSWER

The Nardo Ring is a 7.7-mile race car test track located in rural southern Italy, near the coastal town of Villaggio Boncore. The ring is actually a perfect circle, but appears here as an oval due to the viewing angle of the astronaut who took this picture aboard the International Space Station.

*Eureka! Daily discoveries for the scientifically bent by Scott\_LaFee*