

# A Spider's Web Helps Skylab Crew Trying to Unravel Earth's Mysteries

By HOWARD BENEDICT..

Cape Kennedy, Fla. — (AP) In a quiet corner of the Skylab space station, a spider will spin a web.

Atop Skylab are six telescopes worth \$107 million that the three astronauts will operate from inside — “like playing three 88-key piano boards at one time,” as Charles Conrad puts it.

Here's what these and other experiments aboard Skylab may mean back on earth:

— Scientists expect that in 30 or 40 years they can build a power source that works like the sun works — free of pollution and using materials on earth that will last millions of years. Skylab hopes to unlock some of the sun's secrets about that power.

— Eruptions on the sun spill vast amounts of radiation into space and affect weather and communications on earth. Skylab hopes to find out how.

## Hidden Wealth

— Men can build sensors, put them in orbit, and locate hidden oil and mineral reserves, arable land, sources of water and air pollution, fishing grounds, diseased and healthy crops and sources of timber, map snow cover and assess water runoff potentials. Skylab hopes to determine which instruments can best be used by man in space and which can be operated on unmanned satellites.

— Eyeglasses and precision lenses are imperfect on earth because in a molten state glass picks up contamination from a container. But in zero gravity, molten or liquid material stays put, levitates, and needs no container. Skylab studies may lead to perfect glass.

The Skylab 1 astronauts will grow crystals and compare them to theoretically ideal crystals. They will also experiment with molten metal in weightlessness.

— Gravity makes the various ingredients in steel and other solids separate somewhat in a molten state, leaving the resulting solid weaker than it could be. Skylab experiments with processing molten metal in weightlessness could show that zero gravity produces stronger solids, resulting in jet engines that run at higher

temperatures and save power and defeat pollution, more durable roads, tougher bridges, better appliances, communications, travel and houses.

## What Spiders Think

In addition to these problems, the National Aeronautics and Space Administration asked U.S. high school students to suggest projects for Skylab.

Judith S. Miles of Lexington (Mass.) High School, suggested that common cross spiders ride along for a study of web building in weightlessness.

Scientists say they can tell what a cross spider is thinking by the pattern of the web it spins. Judith wants to know how the absence of gravity will affect that thinking.

The spiders will be in a cage and at various times during the mission motion and still pictures will be taken of web patterns.

Results will be compared to research by the North Carolina Department of Mental Health on the effect of drugs on spiders.

## Radish Roots

In earth's gravity, seed roots and stems grow in a predictable direction. But earlier tests have shown that in weightlessness they follow no specific pattern.

So Joel G. Wordekemper of Central Catholic High School, West Point, Neb., suggested a test on whether light can serve as a substitute for gravity in causing the roots and stems of radish seeds to grow in the proper direction. The radishes are in a Skylab incubator.

The astronauts will operate the telescopes to examine the sun at varying wavelengths.

“The big advantage over earth telescopes is that we'll be operating it above the earth's atmosphere, which filters out most x-ray and ultraviolet radiation from the sun and stars and thus leaves big holes in interpretation and understanding,” Conrad said.

## Gazing at Stars

The telescopes will also aim at scores of stars, the Milky Way, cosmic rays, x-rays and pulsars and quasars, which are mysterious celestial

sources of intense radio pulses.

NASA's Earth Resources Technology Satellite (ERTS) already orbits unmanned over the earth sensing pollution, agricultural changes and collecting geologic data on film, but NASA says the Skylab cameras offer higher resolution photographs — that is, sharper pictures.

Iran, Brazil, Sudan, Colombia and the Philippines asked for agricultural surveys from Skylab and Israel asked for a listing of major soil types, crop disease and insects.

Italy asked for a look at thermal patterns associated with a Tuscany volcano, Greece for a mapping of water resources.

Skylab will study waterborne pollution along the coast of Venezuela, water currents off Japan and dune fields in the Namib and Kalahari deserts of South-West Africa.

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# Skylab Perj

BY BILL LEE  
Daily News Staff Writer

Anita and Arabella, space spiders who orbited weightlessly aboard the Skylab, may have proved something about human behavior process.

It is that we, as human beings, may be far more able to unique experiences we might have thought.

This is the preliminary report drawn by Dr. Peter D. Keyserling, a researcher at Dorothea Hospital in Raleigh, who has been studying behavior patterns in spiders.

In fact, it was Dr. Keyserling who bred and raised Anita and Arabella and chose them for the space flight.

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