

UFO sighters: A down-to-Earth crowd

Welcome to the world of middle-class, no-nonsense, 9-to-5 citizens. While you're here, welcome to the ranks of those who typically report close encounters with unidentified flying objects (UFOs) and space aliens.

No available information supports such claims. Yet contrary to the suspicions of some researchers, people who cite UFO experiences prove neither psychologically disturbed nor especially fond of fashioning elaborate fantasies, according to a study in the November *JOURNAL OF ABNORMAL PSYCHOLOGY*.

UFO reports most often crop up among people who believe in the existence of UFOs, extraterrestrials, and other paranormal phenomena, such as reincarnation, assert Nicholas P. Spanos, a psychologist at Carleton University in Ottawa, and his colleagues. These expectations apparently prime them to shape UFO episodes out of ambiguous events or unusual physical sensations that most often occur at night and in conjunction with a dream or sleep, the investigators contend.

Spanos and his co-workers studied 49 people — most holding white-collar jobs — who described a UFO sighting or a closer otherworldly encounter, such as meeting a space alien or being taken away in a spaceship. Another 127 people citing no UFO run-ins served as controls.

The two groups showed about the same levels of intelligence, psychological health, hypnotizability, and tendency to fantasize, the researchers hold.

Those who sighted UFOs typically saw lights or shapes in the night sky that they interpreted based on their preexisting beliefs in the reality of UFOs and alien visitations, Spanos argues. Many of the more elaborate UFO encounters occurred in dreams mistakenly recalled as actual events, he says. Other accounts focused on the observer's inability to move and feelings of panic. These probably took place during sleep paralysis, a short period of total body paralysis that can occur just before nodding off or upon awakening, Spanos maintains. Sleep paralysis often triggers unusual sensations and hallucinations.

People hold many "counterfactual" beliefs that may sometimes spark supernatural interpretations of an event, Spanos says. "In particular, many people may have religious beliefs that provoke unusual sensory or visual experiences that they don't normally talk about."

Herbal tonic cuts hamsters' alcohol use

An herb long used in traditional Chinese medicine to treat alcoholism contains two substances that dampen the fondness for alcohol displayed by a particular strain of hamster, two biochemists report in the Nov. 1 *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES*.

Further study of these chemicals may produce new drugs to help treat human alcohol abusers, assert Wing-Ming Keung and Bert L. Vallee of Harvard Medical School in Boston.

Keung and Vallee studied Syrian Golden hamsters, which drink large quantities of alcohol when given the chance. A group of these hamsters had continuous access to both water and alcohol. When animals received injections of an extract of the herbal elixir, taken from the root of the kudzu vine, their alcohol intake over six days was half that observed when they received injections of an inactive substance for six days. Two chemical constituents of the extract — daidzin and daidzein — similarly squelched alcohol consumption.

The ways in which these two compounds diminished hamsters' hankering for alcohol remain unknown, the scientists say. Daidzin and daidzein apparently interfere with the breakdown of alcohol in the body, they note.

Other evidence suggests that naltrexone, a drug that blocks naturally occurring opiates in the brain, helps deter uncontrolled alcohol use (SN: 11/21/92, p.341).

Using light to guide atomic deposition

The landscape imaged by an atomic force microscope reveals a remarkably regular pattern of barren, steep-sided ridges neatly arrayed in parallel rows. Indeed, it's the extreme regularity evident in the image that makes this array important as a demonstration of how laser light can be used to manipulate chromium atoms into precise locations on a silicon surface.

"Our experiments demonstrate that atom optical techniques can be used to create, in parallel, a well-ordered array of nanometer-scale lines covering a macroscopic area," Jabez J. McClelland and his co-workers at the National Institute of Standards and Technology in Gaithersburg, Md., report in the Nov. 5 *SCIENCE*.

To create this pattern, the researchers allow chromium atoms, cooled to millikelvin temperatures, to travel through a laser beam to a silicon surface. The laser beam creates a standing wave — a stationary pattern of crests and troughs — parallel to and above the surface. This wave nudges the atoms into certain paths, causing them to pile up on the surface in rows corresponding to the standing wave's troughs (SN: 4/3/93, p.213).

This technique shows promise as a means of fabricating tiny metallic structures for electronic devices smaller and faster than those now available. "It's really an enabling discovery," McClelland says. "There are potential applications for electronics and magnetics, as well as other microscopic technologies." The researchers are now considering the possibility of using two standing waves of laser light at right angles to each other to focus chromium atoms into spots rather than lines.

More B mesons for Cornell

The competition to host the B Factory — a particle accelerator dedicated to the study of subatomic particles known as B mesons — pitted the Stanford Linear Accelerator Center (SLAC) against Cornell University. Last month, the Department of Energy selected SLAC as the site of this new facility (SN: 10/16/93, p.245), leaving uncertain the future of the Cornell Electron-Positron Storage Ring (CESR). Cornell's collider is at present the world's leading center of its type for studying the decays of B mesons.

Now, the National Science Board, the governing body of the National Science Foundation, has approved a five-year program that permits CESR to continue operating. NSF will also provide \$29 million to upgrade the facility's storage ring and its CLEO detector. The new phase of improvements will include doubling or tripling the intensity of the collider's electron and positron beams. "[This upgrade] assures the continued productivity of the CESR-CLEO facility at the forefront of B physics beyond the end of the decade," says Cornell physicist Karl Berkelman.

Unlike SLAC's B Factory, which will have separate rings for positrons and electrons circulating at different energies, CESR has one ring and both particle beams are accelerated to the same energy. This allows the two facilities to concentrate on different aspects of B physics.



This atomic-force-microscope image with an exaggerated vertical scale (foreground) shows chromium lines 65 nanometers wide and 34 nanometers deep, spaced 213 nanometers apart. The vertically striped background shows a larger region of the same surface.