

Briefings

edited by CONSTANCE HOLDEN

Secret Rocket

It was awfully close to April Fools' Day when the news broke: The Department of Defense is secretly developing a multibillion-dollar nuclear rocket for deep space travel and heavy cargo lifting from Earth. But the front-page articles appearing in national newspapers on 3 April were no joke. Steven Aftergood, electrical engineer and researcher at the Federation of American Scientists, had blown the cover of a top-secret Pentagon project named "Timberwind."

According to Aftergood, for several years the U.S. military has been funding the design of a high-impulse rocket, driven by nuclear fission. The documents claim that, if fitted into the frame of a Titan III, the nuclear engine would more than triple that workhorse launcher's payload capacity. At the core of the dream: tiny (0.5 mm diameter) uranium carbide particles coated with zirconium carbide. The intense heat created by a fission reaction in a bed of such radioactive grains would be used to "flash vaporize" liquid hydrogen, creating a powerful jet.

The design has drawbacks, though, says Aftergood. The exhaust would be radioactive, and the rocket, if it crashed, could create quite a blight. Aftergood has obtained records indicating that the Strategic Defense Initiative Office (SDIO), the sponsor of this project, would like to test the engine in a flight over the Antarctic. If the rocket failed in mid-flight, says Aftergood, the Pentagon figures it would have a slight chance (4 in 10,000) of hitting New Zealand. He adds that the Pentagon has already chosen a ground test loca-

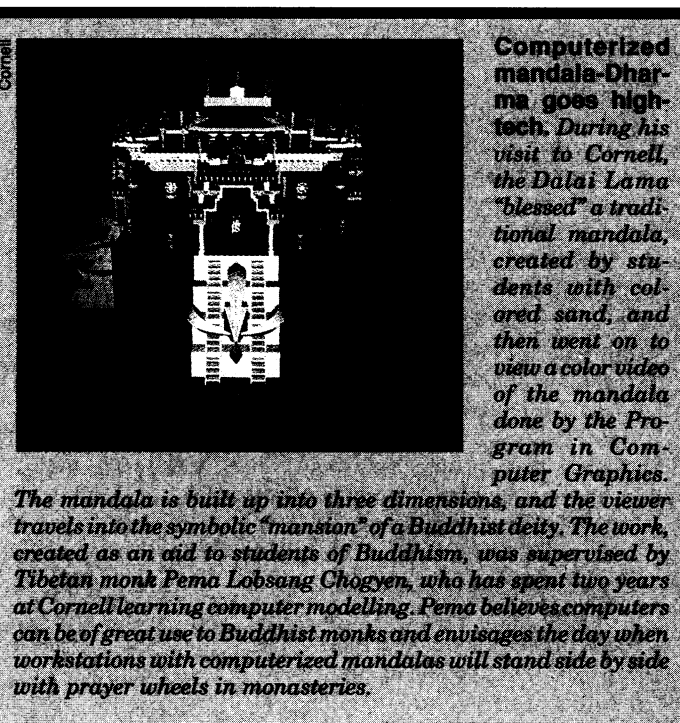
tion—at Saddle Mountain, Nevada—but defense officials are keeping their lips sealed. "I am afraid we have no comment to make at this time," says an SDIO spokesperson—"absolutely none."

The Mind: Buddhism and Biology

The Dalai Lama, the exiled Tibetan leader now living in India, thinks neurobiologists and Buddhists have something in common.

Addressing a packed symposium at Harvard, where he shared the podium with five neurobiologists, the winner of the 1989 Nobel Peace Prize told nearly 1000 attendees that both share a keen interest in mind-body connections and rely on experiments rather than dogma. Just as scientists may start with a theory, he said, the Buddhist, "when investigating the ultimate nature of reality...uses the Buddha's words as a key, not as the authority." And, like scientists, "interpreters are encouraged to rely on their own understanding and experience."

Whether the majority of scientists in the audience accepted the Dalai Lama's analogies, one scientist, Harvard Medical School's Herbert Benson, has



Computerized mandala-Dharma goes high-tech. During his visit to Cornell, the Dalai Lama "blessed" a traditional mandala, created by students with colored sand, and then went on to view a color video of the mandala done by the Program in Computer Graphics.

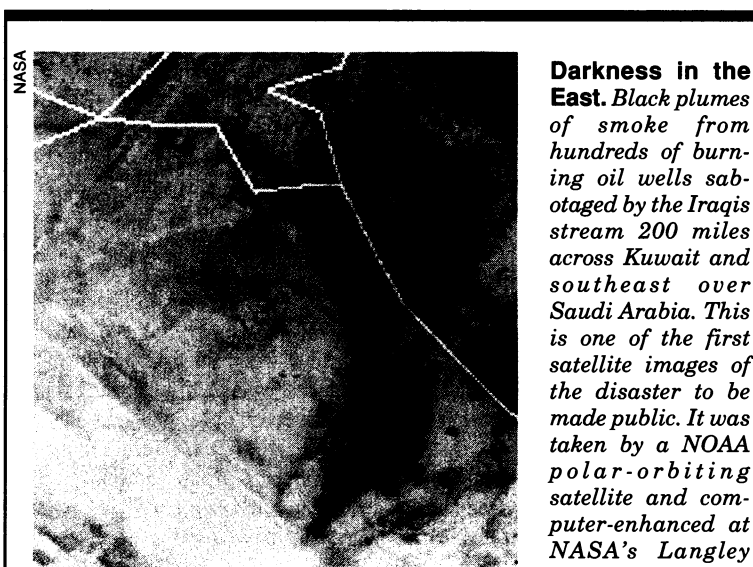
The mandala is built up into three dimensions, and the viewer travels into the symbolic "manston" of a Buddhist deity. The work, created as an aid to students of Buddhism, was supervised by Tibetan monk Pema Lobsang Chogyen, who has spent two years at Cornell learning computer modelling. Pema believes computers can be of great use to Buddhist monks and envisages the day when workstations with computerized mandalas will stand side by side with prayer wheels in monasteries.

tried to embody in his career the dual path of science and Eastern religion. An organizer of the symposium, Benson is a longtime meditation researcher who has been studying how Tibetan monks control bodily functions to the extent that they can do things like generate enough heat to melt snow.

He now heads the Mind/Body Institute, which offers relaxation and meditation training for everything from infertility to the side effects of AIDS.

"The Tibetans," says Benson, "are the real professionals in the area of mind science." He believes the application of powerful advanced meditation techniques may open up entire new areas of clinical applications.

Not all of the neurobiologists at the meeting shared his enthusiasm. Addiction researcher David Potter of Harvard Medical School, calling himself a "radical materialist," said he preferred looking at the effect of a chemical such as crack on specific, "wonderfully nonformless cells," rather than on the formless entity called "mind."



Darkness in the East. Black plumes of smoke from hundreds of burning oil wells sabotaged by the Iraqis stream 200 miles across Kuwait and southeast over Saudi Arabia. This is one of the first satellite images of the disaster to be made public. It was taken by a NOAA polar-orbiting satellite and computer-enhanced at NASA's Langley Research Center in Virginia. Low clouds are light yellow, high clouds are deeper yellow. Dotted line shows Kuwait boundary; Persian Gulf is to the right.

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Antiviral AIDS Drug Nears Approval

AZT is now the only antiviral drug on the market for treating AIDS. But it may soon have a competitor. Bristol-Myers Squibb Company last week applied to the Food and Drug Administration for approval to market ddI (dideoxyinosine) under the trade name VIDEX for pediatric and adult patients infected with HIV.

Even before the filing, some 23,000 patients had received the new drug, either in clinical trials or through an expanded access program for patients ineligible