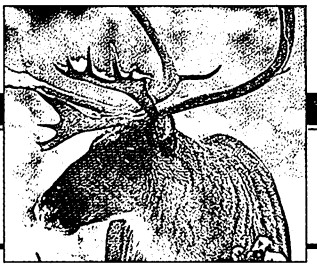


oncologist at Makerere University in Kampala, Uganda, says that holding all studies in the developing world to the same standard of care available in wealthy countries would make such research impractical.

But Lurie disagrees. "If you're able to pull off the study, you should be able to pull off administering medications to people," he says. Drug companies might have been willing to donate the drugs for free, he says, and a different study design "might have produced useful information about the ability of people in rural Africa to take these drugs."

The debate is unlikely to be resolved soon. NBAC will continue to hear testimony from panels of international researchers, and it plans to issue draft guidelines by early summer. But it faces a tough task: "In seven meetings around the world, we were simply not able to get a consensus" on what treatment should be provided for HIV-infected participants in poor countries, says Barry Bloom of Harvard University, who headed the UNAIDS Vaccine Advisory Committee that drew up the recently issued guidelines. He says researchers attempting to design ethical trials need to ask themselves, "Even if you can't provide antiretrovirals, can you do better than nothing?" It's a question that all parties agree desperately needs an answer.

–GRETCHEN VOGEL

ECOLOGY

Five Researchers Die In Boating Accident

A spring-break research trip ended last week in a disaster that left the tight-knit world of professional ecologists mourning the loss of five of its own. The scientists—two Americans from the University of California (UC), Davis, and two Japanese from Kyoto University—died after their boat capsized in high seas off Baja, Mexico. A third Japanese scientist was missing and presumed dead as *Science* went to press.

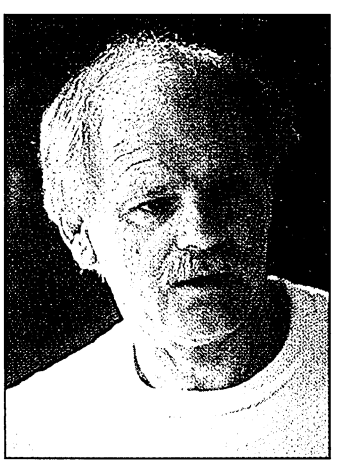
The victims of the changeable weather in the Sea of Cortez were expedition leader Gary Allan Polis, 53, a spider and scorpion expert at UC Davis; Michael Rose, 28, a postgraduate researcher in Polis's lab; termite ecologist Takuya Abe, 55, of the Center for Ecological Research at Kyoto University; and junior colleagues Masahiko Higashi, 45, and Shigeru Nakano, 37.

Polis's 17-member team set out around noon on 27 March in two small boats for a 6-kilometer return voyage from a study site on the island of Cabeza de Caballo to the isolated Mexican port of Bahía de los Angeles. The vessels became separated in windswept seas during a sudden storm. Polis's boat, which carried nine people, capsized about 500 meters offshore, survivors say. Polis apparently died of a heart attack after clinging to the swamped craft for several hours, while the other victims drowned attempting to swim to shore.

Occupants of the second boat—which carried members of a science tourism group from the Earthwatch Institute of Maynard, Massachusetts—returned to search for Polis's boat after it failed to appear. At 10:30 p.m., they reported the disappearance to Mexican authorities, who began an extensive search that eventually led to the recovery of the bodies.

The accident claimed the lives of both prominent practitioners and younger academics just beginning to make their mark. Polis, whose work on insects had been highlighted in popular magazines and even a children's book, had won the Ecological Society of America's Aldo Leopold Award and more than $500,000 in grants from the National Science Foundation (NSF) over the last decade. Abe presented a lower profile, but he was well known in his field for studies of the complex cooperative relationships between termites and plants. NSF director Rita Colwell issued a statement praising all five scientists as "examples of courage" who "put their commitment to knowledge before their comfort and personal security."

–DAVID MALAKOFF



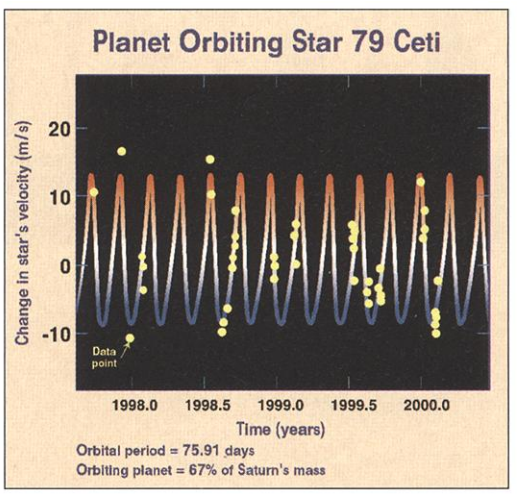
Tragedy. Gary Polis, above, and Takuya Abe were leaders on the trip.

CREDITS: (LEFT TO RIGHT) D. BARRON; G. MARCY/UC BERKELEY

ASTROPHYSICS

New Extrasolar Planets Hint at More to Come

The planet hunters have done it again. On 29 March, NASA announced that astronomers at the University of California, Berkeley, and the Carnegie Institution of Washington had bagged two new planets that circle other stars. Less massive than Saturn, the objects are the smallest extrasolar planets yet found—proof that astronomical techniques are now sensitive enough that scientists could spot our own solar system from afar. The discovery has sparked hopes that glimpses of even smaller planets, Uranus-sized and under, are soon to come.



Cosmic dance. Back-and-forth motion of stars points to ever smaller planetary companions.

"They're pushing and pushing and pushing," says Heidi Hammel, an astrophysicist at the Space Science Institute in Boulder, Colorado. "They'll probably be able to push down to Uranus's mass," she says—possibly within a year.

Over the past half-decade, the discoverers—Geoff Marcy at Berkeley and Paul Butler at Carnegie—have found roughly two-thirds of the 30 or so planets known to orbit distant suns. Because the light coming from those gassy planets is feeble compared to their parent stars' brilliance, they are nearly impossible to see with a telescope. Instead, Marcy and Butler detect them indirectly, by studying how they affect the stars they orbit.

Thanks to gravity, a planet and a star tug on each other with an equal and opposite force. As the planet pulls on the much more

massive star, it causes a small but noticeable wobble in the star's motion. Due to the Doppler effect, this wobble appears as a subtle variation in the star's color as it gets redshifted, blueshifted, and redshifted again.

To detect those changes, the planet hunters use a sensitive spectrometer. Before the light enters the instrument, it passes through a cell full of iodine vapor, which absorbs some of it, superimposing dark lines upon the spectrum at well-known wavelengths. From the way the spectrum shifts relative to that standardized grid, the scientists can get a precise measurement of the motion of the star. By charting stellar motions in a database of over 1000 stars, Marcy and Butler have found a score of planets, each about the size of Jupiter or larger. Naturally, the smaller the planet or the more distant its orbit, the weaker its tug on its mother star—and the subtler the corresponding wobble. Because of this, Marcy and Butler had not been able to detect planets smaller than about half of Jupiter's mass—until now.

To detect fainter wobbles, Marcy says, the astronomers beefed up a computer program that corrects the "idiosyncrasies" of their equipment at the Keck Telescope on Mauna Kea, Hawaii. "Up until 1 year ago, the precision we could measure in stars was plus or minus 8 meters a second," he says, noting that the equipment can now pick out wobbles with a precision of 3 meters a second.

Within months, the newly honed equipment had spotted two planets smaller than Saturn, each roughly a third of Jupiter's mass. The first orbits the star HD43675, located 109 light-years from Earth in the constellation Monoceros, with a period of 3 days; the second orbits the star 79 Ceti, 117 light-years away in the constellation Cetus, with a period of 74 days. By detecting such small planets—particularly the one around 79 Ceti, with its larger orbit—Marcy and Butler have shown that they would be able to spot a twin of our solar system, with a Jupiter-mass planet fairly distant from its star: 79 Ceti's planet sets it wobbling at 11 meters per second, just a shade less than the 12-meters-per-second wobble Jupiter causes in the sun.

Although it's risky to extrapolate from such a small sample, the newcomers hint that big, gassy planets come in an unbroken range of sizes, says Carnegie Institution astrophysicist Alan Boss. "It suggests that there is a continuous distribution of masses" from relatively rare super-Jupiters to fairly common sub-Saturns and below, Boss says. "What we're seeing is really just the tip of the iceberg."

The planets' masses aren't known precisely. The Doppler effect reveals only motion toward us or away from us; side-to-side motion does not affect the color of starlight. Thus, if the orbit of a planet is sharply tilted with respect to our view of the star, astronomers on Earth would detect only part of the star's wobble and would underestimate the planet's mass. For that reason, the two new planets' masses may be larger than announced. But Butler thinks it's unlikely that scientists would greatly underestimate the masses of both planets, as well as others that the astronomers have hinted at but haven't yet unveiled.

Marcy and Butler think that they can refine their technique by another factor of 3, according to Hammel. If so, she says, they should soon be turning up planets about the mass of Uranus, a mere twentieth of Jupiter's. To get much beyond that, however, they will need space-borne instruments such as the ones slated for NASA's Space Interferometry Mission in 2006. "We'll be out of business in 10 years" when it starts working, Marcy says. But until then, says NASA scientist Anne Kinney, there are plenty of planets out there waiting to be discovered. "This is brand-new," she says. "We're going to learn what kind of animals are in that zoo."

—CHARLES SEIFE

CREDITS: (TOP TO BOTTOM) ILLUSTRATION BY PAT RAAWLINGS/NASA; SAM KITTNER

BIOMEDICAL RESEARCH

AIDS Research Head to Retire From NIH

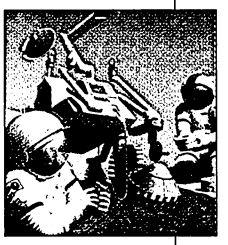
The widely respected, hyperkinetic overseer of the $2 billion AIDS research program at the National Institutes of Health in Bethesda, Maryland, announced last week that he will retire from NIH on 1 September. "That's my 73rd birthday, and the family said, 'You've paid your dues and it's time to come home,' " says Neal Nathanson, director of the Office of AIDS Research (OAR).

Nathanson, a renowned viral epidemiologist, was coaxed from his longtime lab at the

Going home. Neal Nathanson says his family told him he had paid his dues.

ScienceScope

Weightless Watchers NASA has long studied the effects of weightlessness on the human body, knowing that sending people to Mars would expose the crew to the deleterious effects of microgravity for months and even years. But a new report from the National Research Council urges NASA not to forget the hardware. The panel, chaired by engineer Ray Viskanta of Purdue University in West Lafayette, Indiana, calls for an extensive new research program aimed at understanding how gravity's absence affects fluids, flames, and flow controls—and thus fire-prevention, power-production, and sanitation systems critical for a safe flight.



NASA microgravity chief Eugene Trinh praised the soon-to-be-released study: "We've looked at this piecemeal, but this puts it all together." But the panel also complains that "territoriality" at NASA centers is getting in the way of existing research, which it describes as "poorly communicated" and sometimes duplicative. And it concludes that such problems pose a major stumbling block to implementing the report's recommendations. But Trinh believes the agency is "doing a very good job," although he says it will take the criticism seriously.

Money Talks Scrambling to keep up with the debate over genetically modified crops, several big ag biotech companies this week unveiled a public relations campaign "based on objective scientific research." A new Council for Biotechnology Information may spend as much as $50 million a year on ads, speakers, and a Web site to counter what a spokesperson calls "inaccuracies" in the media and to "create a public dialogue." The sponsors are Aventis CropScience, BASF, Dow Chemical, DuPont, Monsanto, Novartis, and Zeneca Ag Products Inc.

The council is still looking for a director, says Dan Eramian of the Biotechnology Industry Organization of Washington, D.C., which will serve as its home. But organizers have already recruited several heavy hitters to the group's advisory board, including former Health and Human Services chief Louis Sullivan and Nobel Prize biologist James Watson.

Biotech critic Jeremy Rifkin, president of the Foundation on Economic Trends in Washington, D.C., thinks the council's efforts will "backfire." More publicity, he says, will only help his cause.