RANDOM SAMPLES

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Face of a killer. Galeras volcano before it killed six scientists.

Volcano Claims Lives of Six Scientists

Four Colombian scientists, the chair of the department of earth sciences at Britain's Open University, and a Russian volcanologist from Kamchatka were killed on 14 January when Galeras volcano in Colombia erupted while they were sampling gases seeping from the volcano's throat. In addition, four U.S. researchers were injured, including principal investigator Stanley Williams of Arizona State University, who is still hospitalized.

The scientists were attending a workshop to develop a strategy for studying Galeras as part of the International Decade of Natural Disaster Reduction. Williams and his colleagues—including Russia's Igor Menyailov, Britain's Geoff Brown, and Colombian volcanologists Carlos Trujillo, Hernando Cuenca, Nestor Garcia, and Jose Arley—had gone into the summit crater of a small cinder cone on the bottom of the main crater. After a decade of relative quiescence, Galeras had come to life in 1989, and by last summer had spewed enough lava to form a small dome on the crater floor. In July an explosion heralded by increased seismic activity destroyed that dome. Nothing having happened since, the scientific party thought it safe enough to look for clues to the volcano's interior state and what might happen next. "What they were doing wasn't crazy," says a volcanologist familiar with early reports from Galeras. "People do it all the time."

When Galeras blew—reportedly entirely without warning—Williams and three colleagues, one of whom died, had just left the rim of the cinder cone. But two others were still inside the rim and another three were outside but near it. Their bodies have not been recovered.

For intrepid volcanologists, prospects for avoiding such rare tragedies aren't bright. Major throat-clearings, like those of Mt. Pinatubo (*Science*, 2 August 1991, p. 514) in the Philippines and Mt. Spurr in Alaska, have been successfully predicted, but secondary eruptions have proved difficult to predict. And routinely substituting robots for volcanologists, as recently attempted by the National Aeronautics and Space Administration at Antarctica's Mt. Erebus, seems a plausible—but distant—prospect. So it looks as though volcanology, at least for the present, will remain a risky occupation.

Japan, U.S. Join Electronic Forces

Japan and the United States last month signed a joint research agreement on optoelectronics, a key component of the 10-year, $500 million Real World Computing program that Japan launched last July.

The purpose of the agreement, according to a statement from the U.S. National Institute of Standards and Technology (NIST), is to stimulate R&D activity in optoelectronics—computing technology that relies on light waves as well as electrons to transmit information. The project will provide designers with access to leading-edge fabrication facilities and encourage commercialization of optoelectronic components based on "novel and experimental designs."

Both nations envision the new accord as a model for U.S.-Japanese cooperative research, in which they will share knowledge without spilling any secrets. Computer scientist Eugene Wong of the White House Office of Science and Technology Policy explains that "the two nations have equal and complementary strengths in optoelectronics"—Japan, for example, has the edge in surface-emitting laser arrays, while the United States has special expertise in logic devices. Each country will make technology available for the other to use, but neither will give away its expertise. If you get NEC to fabricate a vertically emitting array for you, explains Wong, "you still won't know how to make it." So the arrangement, he says, "diffuses the sensitivity of asymmetric flow of technology."

The 2-year project, to start next September, will be managed by a committee composed of five government agency representatives from each country. Plans call for a "broker" in each country who will help link designers of optoelectronic devices with production facilities. The brokers also will ensure uniformity in engineering standards and help sort out intellectual property questions. Japan's Ministry of International Trade and Industry will fund the establishment of the program, including the brokers. The U.S. government will participate through granting agencies such as NIST, the National Science Foundation, and the Defense Advanced Research Projects Agency—enabling U.S. researchers to get their experimental designs fabricated.

Off-Broadway Misconduct

More than a few scientists have been prompted by one scientific misconduct case or another to boot up their word processors, but National Institutes of Health molecular biologist Robert Martin went one step further: He wrote a play.

Titled *A Stampede of Zebras*, the drama had a week-long run earlier this month at a theater in Washington, D.C. The play's name derives from the old medical school warning about unnecessarily exotic diagnoses: "If you hear the sound of hoofbeats, don't look for zebras." But Martin's premise is counterintuitive: When it comes to misconduct, the far-fetched diagnosis is too often correct.

Martin's script focuses on a lab chief whose confidence in his unerring ethical sense is shaken when the results of an investigation of his protégé (a postdoc doing endocrinology research) convince him that the young man is guilty of amassing a stack of unreproducible data. Martin describes the plot and characters as "composites," but the scenario has its familiar aspects: The lab chief, a scientist of international renown, mobilizes the scientific community to support him when he defends his accused co-author at a congressional hearing. One female scientist speaks English with a thick, unidentifiable accent. When confronted with missing experimental results, the accused postdoc fortuitously produces a notebook containing suspiciously neat data that support his case.

Martin is up to more than entertaining audiences with his drama. He's a man with a message: Mistakes happen, and even fraud can be mitigated by extenuating circumstances, "but if scientists don't start policing themselves, there's trouble down the road." So he's all the more pleased that his script has recently been used in bioethics courses at several medical schools and universities.

NEW HEIGHTS FOR POLYGRAPH EXAM

The lie detector has finally achieved true scientific status—at least in one circle. The U.S. Defense Department plans to scrap the term "polygraph examiner" in favor of "forensic psychophysiologist." The polygraph exam itself is now to be called a "psychophysiological detection of deception test," or PDDT.