RANDOM SAMPLES

edited by CONSTANCE HOLDEN

CERN Accused of Radiation Safety Breaches

The CERN particle physics lab near Geneva has long prided itself on its radiation safety record. Thus officials were scrambling to defend the lab's reputation last week after an environmental group and an ex-employee with lung cancer accused it of violating radiation standards.

The accusations were lodged by a French public-interest group known as CRII-RAD, set up in 1986 after the Chernobyl accident to monitor radiation safety issues. Staff from the group conducted two secret visits to the facility in January and February, guided by Pierre Allemann, a former employee of a CERN subcontractor who worked at the lab for 14 years and who is now on medical disability for lung cancer.

According to a CRII-RAD report released on 24 April, samples of waste materials taken from both inside and outside the installation—and analyzed at CRII-RAD's laboratory in the French city of Valence—showed radioactivity levels that greatly exceeded European guidelines for casually stored materials.

Manfred Höfert, head of radiation protection at CERN, says that his own subsequent investigation of the sites visited by CRII-RAD turned up no standards violations. "We have three levels of [radiation security] checks," Höfert told *Science*, and he and other CERN officials question the validity of the CRII-RAD samples. In particular they're skeptical about the provenance of a sample of metal waste provided by Allemann, which he claims to have taken from an ordinary trash can. The group says radiation levels of the sample exceeded guidelines 100-fold.

The episode not only raises questions about safety at CERN, but about security. Bruno Chareyron, chief of CRII-RAD's laboratory and leader of the sample-collecting missions, says he was "shocked at how easy it was to get in. We passed guards and no one asked us who we were." Neil Calder, head of CERN's press service, says, however, that CRII-RAD was able to "penetrate into restricted areas that we keep under lock and key," although he declined to speculate on how they did so.

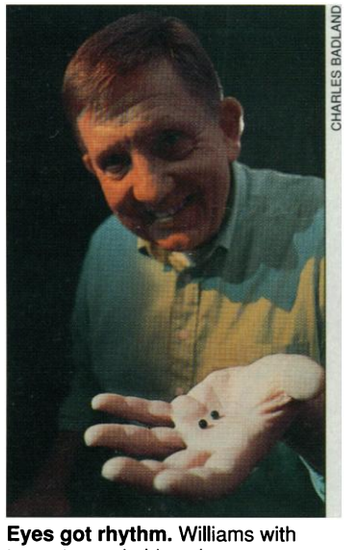
Still, CERN officials have promised to recheck all the areas where the group claimed to have found radioactive materials, and have asked CRII-RAD for the samples so they can verify radioactivity measurements. "If CRII-RAD has identified a weakness in our radiation protection program we can only express our gratitude," says Calder.

Tales From a Dead Rat's Eye

When Theodore P. Williams shined a light into the eye of a newly dead rat, the rodent blinked. Well, actually its pupil contracted. But that was remarkable, considering that the eye was no longer attached to the rat. Williams, a biophysicist at Florida State University in Tallahassee, had found the first clues to what may be a second circadian clock in the mammalian eye—not in the retina but in the iris.

The first such clock, found in a hamster's retina (*Science*, 19 April, pp. 349 and 419), controls the eye's rhythmic production of the hormone melatonin, which probably governs the daily replacement of key parts of the retina's photoreceptors. Williams presented the hypothesized iris timepiece at the annual meeting of the Association for Researchers in Vision and Ophthalmology in Fort Lauderdale, Florida, on 21 April.

Williams began to suspect that such a clock might exist when he couldn't complete another experiment—trying to measure a rat's retinal response to light. "The pupil kept constricting," explains Janice Dodge, his research assistant. On a hunch, Williams tried his experiment at night, and sure enough the pupil remained dilated. To verify his suspicion, Williams then excised the entire pigmented eye from a dead laboratory rat, placed it under a high-powered surgical microscope, and pointed a dim light at the eye at varying times. "If you do this at night with rats that have [just] been killed ... the pupil does not shrink," Williams explains. "But in the daytime, [a newly killed rat's iris] contracts immediately." That suggests that the pupil's response may be controlled by some circadian mechanism.



CHARLES BADLAND

Eyes got rhythm. Williams with two rat eyes in his palm.

How can the clock keep on ticking after its owner has stopped? Neurobiologist Michael Menaker of the University of Virginia, co-discoverer of the retinal clock, says the iris could very well be making its own melatonin, as it contains photoreceptor cells which are thought to manufacture the hormone. "This is a good start, and does suggest that there is more than one clock in the mammalian eye," he adds.

Williams himself is cautious about the meaning of his observation. That, he says, will have to wait until someone actually cultures an iris and tests it for melatonin.

1994 MOVEMENT OF SCIENTISTS	
To Japan from: Europe	5,199
Asia	14,681
N. America	8,043
From Japan to: Europe	26,157
Asia	25,138
N. America	38,874

SOURCE: JAPAN MINISTRY OF JUSTICE

Trade Imbalance

If you were a young scientist considering an exchange program, where would you rather go: to a country where beginning researchers can take charge of their own projects, where technical support is readily available, and where science's lingua franca, English, is spoken—or to a country where new researchers often spend most of their time on their bosses' projects, where technicians are rare, where the cost of living is astronomical, and where the language is fiendishly difficult?

Little wonder that scientific exchanges between North America and Japan are lopsided, with five Japanese heading for the United States or Canada for every North American in Japan. Last month in Tokyo, senior scientists from the United States and Japan held a workshop on the future of East-West biomedical cooperation, organized by Japan's Ministry of Education, Science, Sports, and Culture and the U.S. National Institutes of Health (NIH), where much of the talk focused on redressing that imbalance.

Kiyoshi Kurokawa of the University of Tokyo's faculty of medicine favored incremental change: the expansion of existing programs such as NIH's summer institutes program, which sends U.S. graduate students to labs in Japan for a summer. He said the experience gives students "a significantly higher affinity toward Japan" that will pay off in greater collaboration later. Lance Liotta, an oncologist at the U.S. National Cancer Institute, suggested a new

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New View of Great Wall

The Great Wall of China is—according to popular myth—one of the few humanmade structures on Earth visible from outer space. No astronaut has ever been able to see the structure, however, nor could standard satellite imagery pick it up, according to Jeffrey J. Plaut at the Jet Propulsion Laboratory (JPL) in Pasadena, California. Now a space radar designed to monitor environmental changes by detecting surface variations on Earth has stumbled on the Great Wall. SIR-C/X-SAR, a radar detector that flew aboard the Space Shuttle Endeavour in 1994 in a joint mission by the U.S., German, and Italian space agencies, gathered hints of the wall from 225 kilometers above Earth's surface. This picture shows an outline of the wall about 700 kilometers west of Beijing. Scientists at JPL sent the images to a team of Chinese colleagues, who visited the actual locations. They reported, says Plaut, that in some areas on the ground (such as that shown in the box), "the wall is in such a decayed state that if you didn't really know where to look you may not be able to see it."

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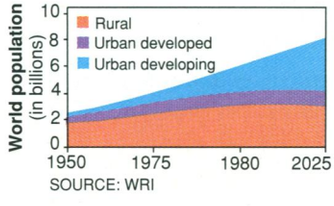
program that would link newly trained U.S. scientists with Japanese "mentors" in related fields. A stint in a Japanese lab, he noted, would be a good way to enable them to generate the preliminary data required to get their first government grant back home.

The grandest idea came from molecular biologist Paul Berg of the Stanford University School of Medicine: He suggested that Japan set up a new international institute of biomedical sciences modeled after the Institute for Advanced Study in Princeton, New Jersey. It should come complete with living accommodations and use English for all discussions, he said: "If you're looking for a breakthrough, you need to do something big."

Urban Nightmare

The World Resources Institute (WRI), a Washington, D.C.–based think tank, issued its biennial report, *World Resources*, on 18 April, and it's a grim one. The focus is on cities, sites of most future population growth, the vast bulk of which will occur in developing countries. A few items from the report:

- The number of urban poor in Latin America increased from 44 million to 115 million between 1970 and 1990.
- At least 220 million urban dwellers lack access to clean drinking water.
- Respiratory-tract infections from air pollution account for 12.6% of deaths in Jakarta.
- In Abidjan, Côte d'Ivoire, 10% of adults carry the AIDS virus.
- Mexico City's aquifer is being overdrawn and is sinking by about 1 meter a year.
- The traffic congestion in Bangkok is so bad that the average commute now takes 3 hours.



Planet urban. Population growth, 1950–2025.

The 337-page report, produced jointly with the United Nations Environment Program, the U.N. Development Program, and the World Bank, has been put in its entirety on the World Wide Web, at http://www.wri.org/wri/.

Waterman, Bush Awards

Stanford chemistry Professor Robert Waymouth has won the National Science Foundation's fattest prize, the Alan T. Waterman Award for researchers of "exceptional promise" under the age of 36. Waymouth, who garners $500,000 for creating a new class of plastic, "thermoplastic elastomers," gets in just under the Waterman wire—he turns 36 on 20 May.

And in the lifetime achievement department, Philip Abelson was selected by the National Science Board to receive the Vannevar Bush award. Abelson actually worked for Bush at the Carnegie Institute of Washington after getting his Ph.D. in nuclear physics in 1939. He went on to become co-discover of the element neptunium, an expert on science and public policy, and editor of *Science* for 22 years until 1984.

Hopwood Ruling on Hold

The U.S. Court of Appeals issued a stay on 19 April of its earlier ruling outlawing the use of race as a factor in admissions and scholarship decisions (*Science*, 29 March, p. 1801). The ruling, in *Hopwood* v. *Texas*, applied to affirmative-action programs only in Texas, Louisiana, and Mississippi, but many observers see it as part of what could be a nationwide trend. The judge, Jerry E. Smith, explained that the stay was warranted because the case is almost certainly headed for the Supreme Court.

Officials at various Texas institutions, who have been scrambling to take racial designations out of admissions and financial-aid policies, told the *New York Times* they intend to return to their pre–court ruling practices. The stay is effective until 13 May, but will be automatically extended when the state files its appeal. "We will be petitioning for cert [a writ of certiorari to the Supreme Court] very soon," says Samuel Issacharoff of the University of Texas Law School. Issacharoff says a number of final admissions decisions were about to be made at the time of the original ruling, on 18 March, so some acceptances turned into rejections.

Uganda May Host AIDS Vaccine Trial

Plans for the first internationally organized African trial of an AIDS vaccine, to be held in Uganda later this year, are moving ahead—finally—at a brisk pace, *Science* has learned.

The World Health Organization in 1991 selected Uganda, where more than one-third of the adults in some urban areas are infected with HIV, as one of four developing country sites to test AIDS vaccines. Despite keen government interest, however, no trial has started yet, primarily because it has taken so long to build the necessary scientific infrastructure. Some researchers have also had strong doubts about the lead vaccines available to date, which contain a genetically engineered version of HIV's surface protein, gp120.

By the end of this year, clinicians Roy Mugerwa at Uganda's Makerere University Medical School and Jerrold Ellner at Case Western Reserve University hope to begin a small trial using a vaccine made by Pasteur Mérieux-Connaught which contains several HIV genes that have been stitched into a canarypox virus. Early tests of the vaccine in France and the United States suggest that it is safe and can trigger a broader range of immune responses than the gp120 vaccines do (*Science*, 1 March, p. 1227).

The 1-year test, funded by the U.S. National Institute of Allergy and Infectious Diseases, has a routine design for early trials: 20 people who are at low risk of becoming infected with HIV will be vaccinated to see if the vaccine is safe and evokes the same immune responses as have been observed previously; 10 control subjects will receive a rabies vaccine also made with the canarypox. "It's essential that we begin testing vaccines in developing countries, not only to promote vaccine development but to learn more about human responses to HIV," says Peggy Johnston, scientific director of the Rockefeller Foundation's International AIDS Vaccine Initiative. "We may be surprised."