National Science Foundation's Division of Astronomical Sciences.

When the WRC last dealt with spectrum allocations back in 1979, millimeter-wavelength astronomy was in its infancy. "At the time there was no way of emitting or detecting waves in that band," says Wooten, "so there was no commercial interest, and the WRC decided to ignore it. Now, as the technology is developing, people are also discovering military and commercial applications in that band."

For radio astronomers, advances in receiver technology and high-speed digital processing have turned millimeter wavelengths into a new frontier. A $550 million joint European–U.S. observatory, to be built in the high desert of northern Chile, is at the end of its design phase. The project, which will consist of an array of 64 12-meter radio telescopes, is scheduled for completion in 2010. Some plan to use it to search the interstellar medium for complex molecules, such as glycoaldehyde, the simplest possible sugar, recently observed among the stars. Wooten describes such chemicals as "on the road to life." Others will use the observatory to study galaxies billions of years older than the Milky Way that formed stars at a rate 10 to 100 times faster. "A lot of those galaxies are completely invisible at the visible wavelengths, because their photons have been redshifted all the way into millimeter wavelengths," says Wooten. "Now we know we'll be able to see them clearly and without interference." **–GARY TAUBES**

NUCLEAR SECURITY

Los Alamos Under Siege After Secrets Recovered

Smaller than a paperback spy novel, the secrets-packed computer hard drives that temporarily disappeared at the Los Alamos National Laboratory in New Mexico could spark big changes in science and security at the country's nuclear weapons laboratories.

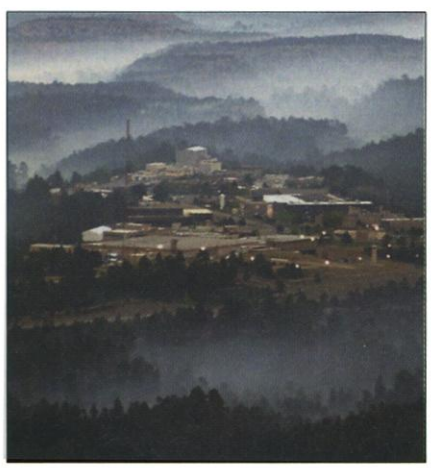
As *Science* went to press, investigators were trying to determine if the disks—missing from a vault since at least 7 May and discovered behind a nearby copying machine on 16 June—were pocketed by spies or just mislaid by employees. Their disappearance touched off a debate about how useful they might be to a rogue nation or terrorist group. Energy Secretary Bill Richardson says he believes the disks never left the premises and "espionage was not a factor." But he isn't waiting for a final report to slap new controls on the flow of sensitive lab information. He has already blamed the lab's contractor, the University of California (UC), for the lax security, raising the possibility that the Department of Energy (DOE) may try to sever the university's 57-year oversight of the lab. At the same time, some lawmakers are calling for Richardson's head.

The incident has refocused attention on lab security and revived debate about the fate of Los Alamos scientist Wen Ho Lee, arrested last December and awaiting trial for allegedly mishandling classified information. It has also broken the logjam blocking the confirmation of former CIA official General John Gordon as head of a new National Nuclear Security Administration to improve security and oversee all weapons work. These and other issues were expected to get a high-profile airing at congressional hearings this week, even as several task forces and the FBI investigate how a team that is supposed to help prevent nuclear terrorism lost track of its classified cookbook for finding and disarming weapons.

To date, DOE officials have been intentionally vague about the contents of the laptop computer hard drives, confirming only that they stored information that might help its Nuclear Emergency Security Team (NEST) find, identify, and disarm a homemade atom bomb or stolen warhead. Formed in 1975, NEST has responded to dozens of calls with a team of scientists and emergency personnel equipped with sensitive bomb-finding and -disarming equipment.

Those familiar with NEST have speculated that the hard drives contain information, ranging from bomb radiation signatures to wiring diagrams, that could be valuable to terrorists and aspiring nuclear powers. Even poorly detailed guides to the shape and construction of weapons components, says Greg Mello of the nonprofit Los Alamos Project in Santa Fe, "would be very valuable to a technically advanced but data-starved country like Pakistan. It would shave years off new weapons' development by helping them avoid dead-end research alleys."

A few commentators have proposed



Hot spot. The disappearance of sensitive computer disks during forest fires last month has sparked new criticisms of Los Alamos lab.

CREDITS: (LEFT TO RIGHT) J. SCHOELLKOPF/AP; INDEX STOCK PHOTOGRAPHY

ScienceScope

Trial Balloon Federal officials are about to test reaction to a hot-button question in the global warming debate: whether the Environmental Protection Agency (EPA) has the authority to regulate carbon dioxide (CO_2) emissions from new vehicles.

Within a few weeks, the agency expects to publish a *Federal Register* notice asking for comments on a petition filed last October by the International Center for Technology Assessment, a green-leaning think tank in Washington. The petition argues that EPA can and should regulate CO_2 under the Clean Air Act because it's a pollutant that's harmful to public health and welfare. Comments already submitted by industry groups, however, argue that the act doesn't apply to CO_2. Moreover, extra CO_2 "is not having harmful effects, and it can be and has been shown to be beneficial," argues Paul Kamenar of the conservative Washington Legal Foundation.

EPA insists that it has no immediate plans to actually regulate CO_2. And officials note that the agency has been asked to air the idea at the request of two warming skeptics in Congress: Representatives David McIntosh (R–IN) and Ken Calvert (R–CA). "The agency isn't taking any position on the merits of the petition," says David Doniger of EPA. "It's simply to get everybody's two cents."

Signing Up After years of dithering, the Indian government has joined global efforts to develop a vaccine against AIDS. Last week Indian and U.S. officials pledged to accelerate cooperative research aimed at developing a vaccine against the HIV subtype most common in the Indian region. India has traditionally been wary of foreign scientists seeking to conduct vaccine trials on its territory for fear that the trials would not benefit its population (*Science*, 20 November 1998, p. 1394), although about 3.5 million people are thought to be HIV positive.

The new accords were signed last week in Washington, D.C., by C. P. Thakur, the Indian Minister of Health and Family Welfare, and U.S. Health and Human Services Secretary Donna Shalala and cover maternal and child health as well as AIDS. A working group of Indo–U.S. scientists will propose specific projects to be carried out under the auspices of the Indian Council of Medical Research in New Delhi and the U.S. National Institutes of Health.

per unilaterally without consulting us at all." In a 24 August letter to *Astronomical Journal* editor Paul Hodge of the University of Washington, Seattle, Mendillo claimed that Dantowitz's paper was based on data belonging to the group and not Dantowitz's exclusive intellectual property. Hodge responded that he would hold up publication until the parties resolved the disagreement themselves.

After negotiations conducted mostly by e-mail—Mendillo and Dantowitz at the end were no longer on speaking terms—the two teams last February agreed to publish separate papers highlighting the newly observed mercurial features, which both appeared in last month's issue of *The Astronomical Journal*. The matter appeared settled, until BU issued a press release touting the technique and the images in advance of a presentation by Mendillo on 2 June at a meeting of the American Geophysical Union in Washington, D.C. Conspicuously absent was reference to the work of Dantowitz and his colleagues. In retrospect, says Baumgardner, "it probably would have been better if we had had a common press release." With the bad blood, however, the teams may have Mercury's once-obscured face in better perspective than each other's point of view.

–GOVERT SCHILLING

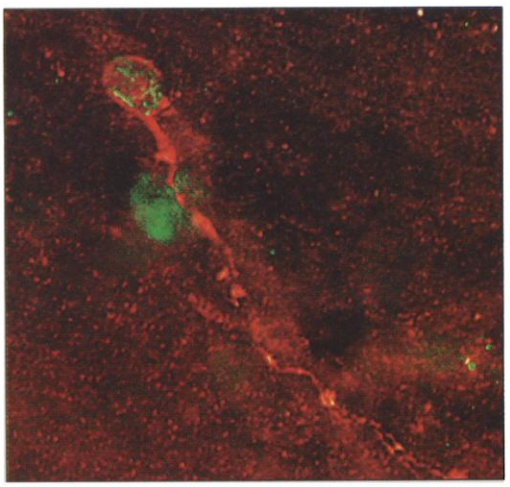
Govert Schilling is an astronomy writer in Utrecht, the Netherlands.

NEUROBIOLOGY

Death Leads to Brain Neuron Birth

Of all the body's organs, the brain seems least able to repair itself if damaged by injury, disease, or stroke. Indeed, throughout most of the 20th century, scientific wisdom held that neurons simply could not regrow after brain development ended. But in the past few years, scientists have provided mounting evidence of neurogenesis, or the production of new neurons, in some areas of the adult brain in organisms ranging from birds to mice and primates. One area that did not seem capable of such regeneration, however, was the neocortex—the region most concerned with such higher brain functions as memory and learning. But new work has now added the neocortex to the list.

In the 22 June issue of *Nature*, neuroscientists Sanjay Magavi, Blair Leavitt, and Jeffrey Macklis of Children's Hospital and Harvard Medical School in Boston report that when they induced certain neurons in the neocortex of adult mice to self-destruct, the loss triggered the formation of replacement neurons by brain stem cells. What's more, the newly formed neurons migrated to the same positions and made the same connections as their deceased predecessors.



Making tracks. A neuron labeled for both BrdU (green) and Doublecortin (red) can be seen making its way into the neocortex.

CREDIT: S. S. MAGAVI, B. R. LEAVITT, J. D. MACKLIS, *NATURE* (22 JUNE 2000)

"This work shows that the adult brain has the capacity to respond to damage by repairing itself," says neuroscientist Elizabeth Gould of Princeton University. If similar regeneration of brain neurons can be triggered in humans, the findings could open the door for treatments that might restore memory in Alzheimer's disease, for example, or undo the damage wreaked by spinal cord injury.

The current research is an outgrowth of previous findings in which Macklis and his colleagues showed that cell death, of all things, could foster a healing environment. Working with neurobiologists Constance Scharff and Fernando Nottebohm of Rockefeller University in New York City, Macklis had selectively induced apoptosis, a form of programmed cell death, in song-related areas of the brains of zebra finches. The result: a burst of neurogenesis. (The research was published in the 24 February issue of *Neuron* and was also described in *Science*, 25 February, p. 1381.) "But this was in a brain area and species where we know neurogenesis takes place," notes Macklis. "The next question was, 'Could we induce it where it does not normally occur?' "

To find out, Macklis and his Harvard colleagues zeroed in on a group of neurons in the mouse neocortex. Although new neurons were not known to grow in the area, it is near a potential source of neurons, because it lies above the subventricular zone, which contains so-called multipotential neural precursor cells, better known as stem cells. The researchers injected a select group of neurons in the neocortex with a light-activated chemical that triggers apoptosis. The resulting neuronal death mustered the underlying precur-

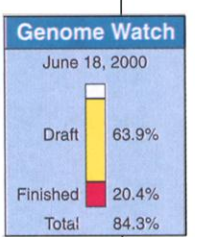
ScienceScope

Reviving the Dead Zone A White House plan to shrink the Gulf of Mexico's "dead zone" calls for major cuts in river-borne nutrients and more funds to create pollution-trapping wetlands and stream-side buffers. But observers say the draft road map, released last week by the Mississippi River/Gulf of Mexico Watershed Nutrient Task Force, still lacks some key details—such as a price tag.

The 18,000-square-kilometer dead zone appears each spring at the mouth of the Mississippi. Floods wash excess nitrogen into the gulf, triggering algae blooms and an ecological chain reaction that reduces oxygen levels and suffocates sea life (*Science*, 10 July 1998, p. 190). To reduce the nutrients, the panel calls for restoring 2 million hectares of wetlands and cutting fertilizer runoff by 20% by 2010 in the Mississippi Basin, which holds more than half of the nation's farmland.

Will Congress back the plan? "That depends on the price—and assurances that it won't harm the region's $100 billion farm economy," says a House aide. A final version is due later this year.

Any Day Now In May, the 16 international partners producing a publicly owned sequence of the human genome set a 15 June deadline for submitting 90% of the gene-containing regions to GenBank, a public database. The milestone would signal the end of a frantic race to produce a rough draft of the 3.3-billion-base genome ahead of private competitor Celera Genomics of Rockville, Maryland.



But as of 18 June, the team was short of its goal—stuck at about 84% (right). A weekly tabulation by the National Center for Biotechnology Information (NCBI) revealed one reason why: Although GenBank has almost 3.9 billion bases of human sequence in-house, more than a billion are duplicates. The duplication is a natural outcome of the sequencing process, which starts with small chunks of overlapping DNA that are pieced together into a long, continuous string. As a result, the "redundancy goes up as [the project] approaches completion," explains NCBI's Greg Schuler. His Genome Watch, which charts sequencing progress, has edged up at just 1% per week lately, but the sequencers still hope for a June finish. Tune in to www.ncbi.nlm.nih.gov/genome/seq/HsHome.shtml to see if they make it.

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