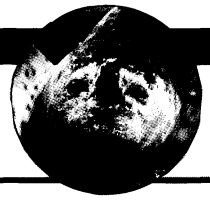
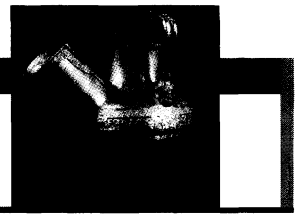




need both new and old techniques," says Gregory Ebel, 33, who studies West Nile virus at the New York State health lab in Guilderland. "I completely agree with most of Calisher's points," adds Robert Lanciotti, 41, who helped tease out the West Nile pedigree at the Centers for Disease Control and Prevention in Fort Collins, Colorado. (And "I'd love to go on field trips," he adds.)

Ab Osterhaus, 53, of Erasmus University in Rotterdam, the Netherlands, says he agrees with the authors' basic point, but he thinks they're overly pessimistic. There may be a little imbalance right now, but Osterhaus is certain that people will discover that good virology takes both fancy new tricks and time-honored methods. "I'm not worried that the field is going down the tubes," he says.

Calisher is not so sure. "I'll keep stirring this pot," he promises. "There's too many people who think they don't need this old-fashioned stuff." **–MARTIN ENSERINK**

WETLANDS RESTORATION

Recreated Wetlands No Match for Original

The assumption that an artificial wetland can replace a natural one has shaped U.S. policy for the past decade. Now, in unusually blunt language, a new report by the National Research Council* (NRC) says that the current approach, designed to ensure "no net loss" of wetlands, is a failure and that humanmade ecosystems are often a poor substitute for the real thing. What's needed, the report says, are major changes to the system for designing and regulating replacement wetlands.

Environmental groups that have long criticized the current wetlands approach are delighted at the report's assertive tone. "This report changes the landscape on wetlands," says Julie Sibbing, wetlands policy expert for the National Wildlife Federation in Reston, Virginia. "We can't pretend [the policy] is working anymore."

The existing policy gives developers the option of building a subdivision or a shopping center on top of a water-logged spot—if it's unavoidable and they restore or create a marsh nearby. That compromise was struck some 2 decades ago after government officials realized that the country was losing its wetlands at an alarming rate. What's more, these swamps or marshes, once regarded as unhealthy and worthless, were actually key wildlife habitat and valuable resources for cleaning water and controlling floods. In 1980, the Environmental Protection Agency (EPA) revised its guidance on the amended 1972 Clean Water Act to stipulate that landowners who get a permit from the U.S. Army Corps of Engineers or a state agency to build on a marsh may need to make up for the damage. Agencies began to promote this so-called mitigation policy after the first Bush Administration embraced a goal of "no net loss" of the area and function of wetlands in the continental United States, now estimated at 42 million hectares. The policy was continued under President Clinton.

Cheap imitation? Developers often take the easy way out, building cattail ponds instead of more complicated wetlands.

The NRC expert committee, formed at the request of EPA, found that although various factors, including less destruction of wetlands for agriculture, have stemmed their overall loss, mitigation isn't working. According to the corps, 17,000 hectares of wetlands have been created for 9500 lost between 1993 and 2000. Yet despite almost double the area, "the goal of no net loss is not being met," says panel chair Joy Zedler, an ecologist at the University of Wisconsin, Madison.

One problem, the panel found, is that the corps doesn't keep very close tabs on the projects, and many are abandoned or never begun. Also, many of the recreated wetlands don't function in the same way as the original ones, which often depend on intermittent water flows to support a specific mix of plant and animal species (*Science*, 17 April 1998, p. 371). Moreover, some developers construct easily imitated types of wetlands such as cattail-lined ponds where they're "not naturally occurring," Zedler says.

The report recommends that wetlands that can't easily be replicated—like fens and bogs—be left alone. Wetlands that must be harmed should first be studied so that permit holders know what they're trying to reproduce. And before issuing a permit, regulators should look at the entire watershed to see if creating a different, more distant wetland would do more good in the long run than building an identical one nearby. To help accomplish these goals, the panel recommends a new database to track permits, a research program to find out what works, stricter enforcement, and long-term monitoring.

It's now up to the younger Bush Administration and Congress to turn the report into action by beefing up the corps' regulatory budget for wetland mitigation, now $125 million a year, says panel vice chair Leonard Shabman, an economist at Virginia Polytechnic Institute and State University in Blacksburg. The watershed approach will also require better coordination among various agencies. "It's not an easy thing to do," says Jeanne Christie, executive director of the Association of State Wetland Managers in Berne, New York. "We've been talking about this for years." **–JOCELYN KAISER**

KENNEWICK MAN

Missing Thighbones Suddenly Reappear

In the latest twist in the interminable tale of Kennewick Man, four leg bones that disappeared 4 years ago have apparently resurfaced at the Benton County sheriff's storage facility in Kennewick, Washington. The Federal Bureau of Investigation (FBI) promptly took over the bones, which were rediscovered last week at the same time a court case resumed over disposition of the 9300-year-old remains.

The bones, found on the shore of Washington's Columbia River in 1996, have been the object of a long-running tug-of-war between scientists who want to study them and Native Americans who want to bury them. Several federal agencies have mediated the dispute, and scientists are hoping that a ruling due soon from U.S. District Judge John

*Compensating for Wetland Losses Under the Clean Water Act, NRC, June 2001, www.nap.edu/books/0309074320/html

CREDIT: PHIL SCHERMEISTER/CORBIS

Together again. Wads of clay show where both femurs were broken.

Jelderks in Portland, Oregon, will toss the Kennewick find back into their domain.

Kennewick Man's bones are well traveled. Shortly after they were found, they were seized by the U.S. Army Corps of Engineers in response to concerns from Native Americans. Stashed in the county coroner's office, then sent to Battelle Pacific Northwest National Laboratory in Richland, Washington, the bones are now stowed at Burke Museum in Seattle.

An inventory taken at Battelle in 1997 revealed that most of Kennewick's thighbones—two pieces from each femur—were absent. Now they have apparently reappeared as mysteriously as they vanished. Richland anthropologist James Chatters, who studied the bones before the government took them, says workers demolishing an old storage building used by the sheriff found them in the coroner's evidence locker—in a box labeled as containing some other Columbia River bones that had been returned to Indians for burial in 1998.

"I'm utterly baffled," says Chatters, who notes that the FBI ransacked the sheriff's locker in a search for the bones in 1998. So is Michael Trimble, chief curator for the corps, who says "I haven't a clue" how they turned up again.

FBI spokesperson Roberta Burroughs says the bones have been tentatively identified through comparison with photos. The FBI is awaiting approval from the U.S. attorney's office before returning them to the corps.

Chatters says that the femurs should yield information about racial origins, because the femoral head in American Indians is more highly rotated in relation to the shaft than it is in Europeans. But the U.S. legal system will ultimately decide whether scientists will have another go at them. **–CONSTANCE HOLDEN**

CREDITS: (TOP TO BOTTOM) JAMES CHATTERS; HANS SUPÈR

NEUROSCIENCE

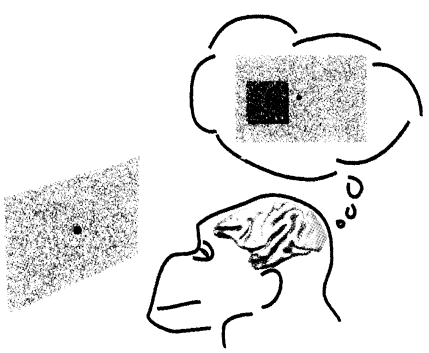
Neurons Fix Memories In the Mind's Eye

When a monkey has to remember something, it holds that thought in its mind's eye, a new study suggests. Earlier memory research showed that higher order brain regions such as the frontal lobes buzz madly when monkeys (and people) remember something briefly. But this study, which appears on page 120, is the first to show that even the lowest level, workaday region of the visual cortex also hums with anticipation while maintaining a memory. The researchers suggest that this part of the brain holds on to a simple sensation that helps guide more sophisticated parts of the memory system.

The work comes from Hans Supèr and colleagues at the University of Amsterdam in the Netherlands, who looked at the responses of neurons in the primary visual cortex (V1) while animals were engaged in a test of working memory. This type of memory holds information at the ready, temporarily, while an animal prepares to act. The prototypical example is reciting a telephone number while walking from the phone book to the phone to dial.

Neurobiologists used to think that V1 simply sorts incoming visual information before passing it on to higher brain centers for interpretation. As vision scientist Jeffrey Schall of Vanderbilt University in Nashville, Tennessee, points out, the brain area is "just one step removed from the retina." But the Supèr team showed that neurons in V1 actively store memories of an image, briefly holding them until the animal makes the appropriate response.

The result follows other studies in the past several years showing that V1 neurons aren't simple receptacles of light and shadow. For example, neurons in V1 fire more enthusiastically in response to a stimulus that tells a monkey how to get food than to an irrelevant stimulus. Now this study shows that V1 neurons don't even need a stimulus—they con-



You must remember this. Neurons in V1 (red) fire to a remembered stimulus even after it vanishes.

ScienceScope

Torn Loyalties A nasty fight is brewing between the Bush Administration and Congress over who should administer proposed math and science education partnerships involving universities, schools, and industry (*Science*, 25 May, p. 1463). Hundreds of millions of dollars are at stake, and the National Science Foundation (NSF) is caught in the crossfire.

The House Science Committee last month passed a bill that would put universities in the driver's seat by funneling federal funds to academics and nonprofits working with the schools. That time-tested approach is fine with NSF officials, sources say. But some Administration officials object, and in a 19 June letter to congressional leaders, NSF director Rita Colwell followed her bosses' wishes and argued that the program should give awards directly to state and local school districts. They are "closer to the needs of students" and more accountable for their performance, Colwell wrote. She also complained that a larger education reform bill moving through Congress goes against the Administration's plans by putting the Department of Education—and not NSF—in charge of the partnerships.

The disagreement won't be resolved until Congress finishes the education package later this year.

Money Talk A proposal to charge researchers up to $500 to post their papers on a free-access Web site is drawing mixed reviews from scientists. BioMed Central—a free online publisher—last week said that it is mulling a sliding scale for author charges. Publisher Jan Velterop says the charges will help maximize the distribution of papers and eventually reduce the amount of money that the scientific community overall spends on publishing fees and journal subscriptions.

The fee idea is backed by the Public Library of Science (PLoS), an advocacy group that has challenged journal publishers (including AAAS, publisher of *Science*) to provide free access to back issues (*Science*, 23 March, p. 2318). But in an online debate on the proposal (www.biomedcentral.com/editorial/charges.asp), some researchers argue that a fee will drive researchers to submit their best work to commercial journals that have no charges and will possibly drive up costs in the short run, as institutions pay both to publish and maintain subscriptions. If BioMed Central does impose the fees, officials say they would come no earlier than 2002.

Contributors: Jeffrey Mervis, David Malakoff