RANDOM SAMPLES

edited by CONSTANCE HOLDEN

Creationism: Alabama Cracks Open the Door

Science educators are nervously awaiting the selection of school textbooks in Alabama later this year. Their fear: Guidelines for science teaching adopted by the state board of education last month may open the door to the teaching of creationism in that state. The guidelines, which apply to textbooks for kindergarten through 12th grade, emphasize that evolution is only a "theory."

The board will select textbooks incorporating these guidelines in September, for use throughout Alabama's public schools, and members of the Alabama Academy of Sciences are fearing the worst. Under the current course guidelines, adopted at the last go-round in 1988, evolution is not "qualified," and creationism is not mentioned, says geologist Scott Brande of the University of Alabama, Birmingham. But the new guidelines specify that "explanations of the origins of life and major groups of plants and animals, including humans, shall be treated as theory and not as fact."

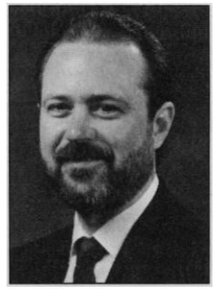
Other changes, according to Brande and Tuskegee University biologist John Fransden, chair of the Alabama Academy of Sciences' Committee on Science and Public Policy, include small revisions such as adding horseshoe crabs—which, like the creationists' version of humans, haven't changed over time—to a discussion about fossils.

Indeed, Fransden notes, evolution foes "have succeeded in removing all the wording" that could hinder state approval of creationist texts. The scientists worry in particular that a book explaining "intelligent design" that was rejected in the past, called *Of Pandas and People*, may be back in the running.

Molleen Matsumura of the National Center for Science Education, a group in El Cerrito, California, that monitors anti-evolution trends, fears that other states may follow suit. Alabama, she says, is not the only place where creationism appears to be "picking up steam." In Louisiana, for example, school authorities at one parish recently instructed teachers to read a disclaimer to students before any discussion of evolution.

GM Engineer Wins $500,000

A 34-year-old General Motors engineer, William J. Bolander, has become the first winner of the Lemelson-MIT Prize for Invention and Innovation, a half-million-dollar award established last year by inventor Jerome Lemelson.



William Bolander

The award was announced at a 29 March press conference at the Smithsonian Institution in Washington, D.C., by economist Lester Thurow, who administers a Lemelson-funded innovation program at the Massachusetts Institute of Technology. Bolander has come up with a flock of inventions including technology that, by staggering the cylinders' function, allows Cadillacs to "limp home" air-cooled if they lose coolant.

Thurow said Bolander was netted through a process that involved sending out 4000 invitations for nominations. Names were winnowed out by a team of MIT graduate students. Many candidates were self-nominated, said Thurow. But the modest Bolander, put forth by colleagues at GM, refused to believe it when Thurow called him a few weeks ago with the good news.

The prize, designed to stir up the innovative spirit among U.S. youth, will be given annually for the next 4 years, said Thurow, and then reassessed to see if it seems to be accomplishing its aim. Also honored for "lifetime achievement" were William Hewlett and David Packard, founders of Hewlett-Packard, who get special MIT-made holograms but no money.

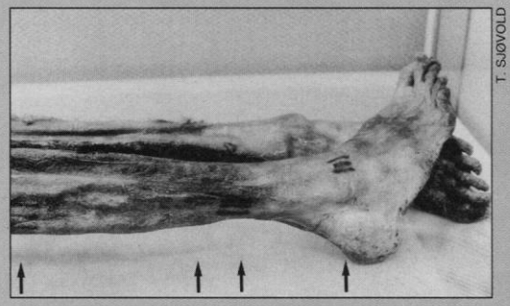
"Ice Man" Markings Seen as Medical Tattoos

Researchers studying the 5000-year-old "Ice Man," who was discovered in 1991 in the Tyrolean Alps, have long been puzzled by tattoos on parts of his body that could not be seen readily. Now, scientists at the universities of Innsbruck and Stockholm believe they have figured out the purpose of these markings: They appear to be medical tattoos, applied to areas where the Ice Man experienced pain. If so, the practice of medical tattooing is far older than had previously been thought, says anthropologist Torstein Sjøvold.

Sjøvold, professor of historical osteology at the University of Stockholm, says that x-rays have revealed osteoarthritis in some areas where tattoos were applied, such as the inside of the right knee and the right ankle. Other tattoos are over muscles such as the calves that would be sore from mountain-climbing.

Until now, says Sjøvold, the oldest medical tattoos have been seen in people from the Skyth culture, who lived in the Altai mountains in Siberia about 2400 years ago. Sjøvold now speculates that the Ice Man's markings, made with soot and some sharp instrument, may be found to be a precursor of acupuncture.

The Ice Man's medical checkup also indicated that he was not in great shape for the young man he is presumed to have been at the time of his death. Not only did he have arthritis, but radiologist Dieter zur Nedden at the University of Innsbruck and colleagues reported last year that he had calcifications in his carotid artery, indicating he had already developed some arterial sclerosis.



T. SJØVOLD

Aching Ice Man. Infrared photographs reveal sets of markings on calf and lower leg *(arrows)* in addition to visible marks at ankle.

While DNA analysis (*Science*, 17 June 1994, p. 1775) has confirmed that the man was European—and not an Egyptian or South American mummy planted in the ice as a hoax—scientists still don't agree on how old he was. Zur Nedden says the cranial suture indicates he was no more than 30. Sjøvold, however, thinks the signs of wear and tear suggest he was closer to 40.

Layoffs at Hopkins Lab

A downturn in defense spending and the loss of a National Aeronautics and Space Administration (NASA) contract will force the Johns Hopkins Applied Physics Laboratory (APL) to cut 350 jobs—about 10% of its work force—as of next month.

Thus ends a 14-year period of steady budget growth for APL, one of the earliest of the band of university-affiliated defense and space contractors to spring up during World War II. The lab is one of the few university facilities that still conducts classified research, however; among its projects has been the guidance system of the Trident missile.

The layoffs, announced on 27 March, stem from a $60 million reduction in APL's contract with the Navy, its primary customer, to about $407 million this year. The

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Education Booster for AIDS

With AIDS, education may be the best vaccine. But educators battling ignorance in some ways face as big a challenge as do researchers battling the human immunodeficiency virus. "When you mention the immune system, people don't know what you're talking about," says molecular geneticist Barry Aprison, the project director of a new, permanent AIDS exhibit at Chicago's Museum of Science and Industry.

Making AIDS real. Exhibit director Barry Aprison surrounded by big blue HIVs.

To help fight that battle, the museum famous for its walk-through heart has opened an exhibit, "AIDS: The War Within," to walk people through the melee between human immunodeficiency virus and the immune system. Visitors will first be confronted by 500 HIV replicas, 9 inches in diameter, attached to columns and balcony railings. Displays of a real thymus and lymph node will probably attract less notice than Toss-A-Virus, which shows museumgoers how HIV attaches to a cell by having them shoot Velcro-coated dummy viruses at a huge T cell hanging from the ceiling. A computer animation offers a *Fantastic Voyage*-like trip around the immune system, while other video displays show how an HIV blood test works. Still other displays feature people who have AIDS explaining its effects on their lives. The permanent exhibit, which occupies a whopping 4000 square feet of the museum, opened on 28 March.

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layoffs will be applied across the board, "from cafeteria worker to physicist," says APL spokesperson Helen Worth. About 60% of APL's 2735 full-time and 700 contract workers are scientists and engineers. Adding to APL's troubles has been the cancellation of plans for the Near Earth Asteroid Rendezvous Sample spacecraft—a contender for NASA's Discovery Program that didn't make the cut. The contract would have provided $125 million in 1996, and its loss ended any illusions about evading layoffs.

APL may be forced to change the way it does business in the future, according to business director Edward Portner. While the lab has been able to diversify its portfolio with contracts from the Departments of Transportation and Treasury, only 2% of the budget comes from competitive grants. But now the Navy, for which APL has been a sole-source contractor, is studying whether to open up some of the lab's programs to competition from other research institutes. APL's fortunes in any case will remain tied to those of the Department of Defense. "We are a defense lab," says Portner. "We don't see ourselves changing from that."

Tele-fusion

Physicists at the Massachusetts Institute of Technology stood by and watched last week as scientists in California used the Internet to seize control of their fusion reactor, manipulating it from more than 3000 miles away.

In an early test of techniques expected to be crucial to future big-physics projects, four scientists from MIT's Plasma Fusion Center flew to Lawrence Livermore National Laboratory in California in late March to oversee the first-ever magnetic-confinement fusion experiments conducted remotely via the Energy Science Network (ESnet).

The MIT scientists used ESnet to set parameters for their Alcator C-Mod fusion reactor, such as the shape, length, and current of each plasma "shot." The computer link also carried video and voice transmissions. Aside from the usual Internet annoyances—including a video signal that froze from data overload—the trial went smoothly. Alcator engineers monitored safety, ensuring that the remote operators couldn't program plasma bursts that might damage the reactor. The operators got back instant results, which gave them time between shots to check data quality and reconfigure the reactor.

While the experiment produced no big surprises, it did teach the scientists a few things about "netiquette." With four microphones and two video cameras in each control room, "it wasn't always clear who was speaking to whom," says the center's physics operations leader, Stephen Wolfe. For now they're solving that problem with a low-budget supplemental link called Internet Relay Chat.

Such remote experiments are expected to become commonplace in the future for projects like the planned International Thermonuclear Experimental Reactor (ITER). "A lot of people thought remote operation would be one of the more difficult technical problems" in designing such multinational laboratories, says Wolfe, "but we've shown that it doesn't much matter anymore where the physicists and the machines are, as long as you've got a fast link." Wolfe expects the demonstration to spur other scientists to propose similar experiments. As soon as transoceanic data links gain sufficient bandwidth, he notes, future reactors could run 24 hours a day, with operators 12 time zones away doing experiments while local scientists sleep.

Doubts Cast on 1959 AIDS Claim

Faxed copies of an article from a London newspaper were avidly read in AIDS labs around the world last week. The story: that new studies suggest that the oldest confirmed case of AIDS—a British sailor who died in 1959—may not have been AIDS after all.

In 1990, Gerald Corbitt, Andrew Bailey, and George Williams at the University of Manchester reported they had found HIV in paraffin-preserved tissue samples from the sailor, who died in Manchester of *Pneumocystis carinii* pneumonia and cytomegalovirus infection. This confirmed what Williams and two other physicians—all of whom had worked on the original case—had postulated 7 years earlier: that the 25-year-old "Manchester seaman" was the first known person to die of AIDS. But as the *Independent* revealed on 24 March, new analyses of the man's tissue samples show no signs of HIV.

The new studies were done by David Ho and Tuofu Zhu of New York's Aaron Diamond AIDS Research Center, who wanted to find out what strain of HIV the man had. This work began in 1992, when the two scientists sequenced a sample of HIV DNA that Corbitt had extracted from the seaman's tissues. Ho and Zhu were surprised to find that the virus was a "Type B" strain predominant in the United States and Europe today.

This finding puzzled Gerald Myers, who runs the HIV sequence database at Los Alamos National Laboratory. Because the viruses mutate quite quickly, "I was concerned that it could not be a 1959 sample," he says. "I urged David Ho to get original tissue." So, after repeated requests to Williams, a retired pathologist, Ho obtained a half-dozen samples in February 1994. This time, Ho and Zhu found no trace of HIV. Further analysis showed that the tissues could not have come from the owner of the DNA.

So which specimens came from the sailor? Williams assured the *Independent* that the tissues he sent Ho were those of the seaman. Ho doesn't know what to think of the conflicting results. Ho and Zhu, who have submitted the findings to *Nature*, say Williams has additional samples and they would now like an independent lab to evaluate them.