RANDOM SAMPLES

edited by FAYE FLAM

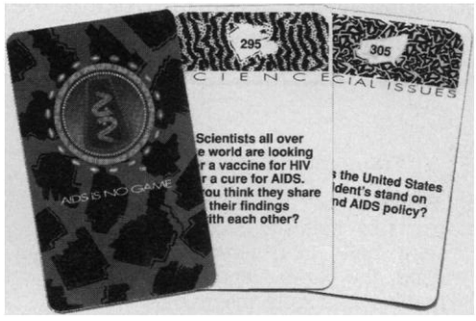
Antarctica's Kinder, Gentler Past

Turn back the geological clock and Antarctica's vast ice sheets would give way to lush forests. Scientists have only the sketchiest picture of the kinds of flora and fauna that existed on the continent then, however, and they are still arguing over how long ago the land became overrun with glaciers. But thanks to a new slew of fossils, geologists say they will soon have a much more complete picture of Antarctica's past.

Geologist David Harwood of the University of Nebraska and his colleagues recently collected a variety of fossils of marine mollusks, microscopic organisms, and leaves and twigs, which appear to come from the Eocene period—35 million to 55 million years back. He also found actual wood—not petrified wood—sealed in the rocks. "The most exciting thing is that the wood is still preserved," says Harwood. That may allow scientists to isolate DNA fragments, which in turn could tell them something about the evolution of plant life on the continent and how it diverged from flora in Antarctica's former adjunct, Australia, which split off around 50 million years ago.

Harwood didn't have to go digging into the ice to find his fossils, he says. The vast glaciers did the work for him, dislodging rock fragments and depositing them at the shoreline.

It will take time to figure out where the fossils came from on the vast continent, which spans an area about the size of North America. But in addition to filling in some of the gaps in the record of life on the continent, Harwood says he anticipates that the fossils will help solve the long-running debate over when Antarctica froze over. And comparing these with more recent fossils will help his team figure out whether the ice holds steady or advances and retreats. Harwood says he believes the ice comes and goes, with the current coating building up as recently as 3 million years ago. And understanding the permanence of the Antarctic ice may eventually say something about the way the icy continent will hold up in the event of global warming in the not so far future.



AIDS Ed. Not a trivial pursuit.

The Prevention Game

Can HIV be spread by sharing eye make-up? In what year were the first AIDS cases reported? A drop below what number of T-4 helper cells usually marks the early stages of AIDS? If you answered "no," "1981," and "200," rack up three points for your team.

Welcome to "AIDS Is No Game," a classroom tool to teach teens about HIV and AIDS. The game divides the class into two teams, which are then quizzed about AIDS science, medicine, prevention strategies, and social issues. Designed and marketed by Programming Concepts Inc. of San Antonio, Texas, "AIDS Is No Game" also includes buttons with pictures of HIV, an "Epidemic Watch" poster that lets students update the spread of AIDS cases throughout the United States, dice, playing cards, and pre- and post-game tests.

The $300 game is being billed as an "educational vaccine," under the premise that education is the best way to prevent HIV infection.

Environmentalists Choke on Smog Rules

Carol Browner's Environmental Protection Agency (EPA) doesn't seem to be following the script many pundits wrote for it. Instead of delighting environmentalists and causing heartburn for industrialists, two early EPA decisions have done just the opposite. First, Browner declared "obsolete" longstanding rules designed to keep even trace amounts of carcinogens out of processed foods. Now she has caused environmental organizations to choke by deciding that there's insufficient scientific evidence to tighten its air-quality standard for smog.

The Clean Air Act requires EPA to review its air-quality standards every 5 years. But by October 1991, EPA had gone 12 years without reviewing the standard for tropospheric ozone, a key constituent of smog. That prompted a lawsuit in U.S. District Court from several groups, including the American Lung Association, the Environmental Defense Fund, and the Natural Resources Defense Council.

In a ruling last month, the district court judge ordered EPA to make a decision on the standard by 1 March. When it was clear, however, that the agency would not have the time to analyze any health studies published in the past 3 years, the plaintiffs tried to persuade EPA to ask the court for an extension. (Environmentalists claim that recent studies support their argument for a stricter standard.) The EPA declined, and in a statement on 1 March said that the older studies "do not provide a sufficient basis for revising the standard at this time." Environmentalists may not have to wait another 5 years for a revised ozone standard, however: An EPA official told *Science* that the agency hopes to analyze the recent studies within 2 years.

Weakest Chemical Bond Detected

After 65 years of technical bickering among chemical theorists and experimentalists, researchers have finally demonstrated that helium can form 2-atom molecules. These are no ordinary molecules: Pairs of helium atoms form such a weak chemical bond that they take up as much space as a small protein comprising hundreds or thousands of atoms.

Determining whether a pair of helium atoms can form bonds has been a persistent, albeit arcane, itch for physical scientists. It is the only possible chemical pairing of naturally occurring atoms whose existence has remained in dispute, says physical chemist W. Ronald Gentry of the University of Minnesota.

In the 15 February *Journal of Chemical Physics*, Gentry and colleagues argue that their mass spectrometer detected the telltale peak at 8 atomic mass units, just where a helium molecule ought to show up. To make the putative molecule, the researchers leaked helium atoms into a chamber kept at a high vacuum, where they slowed, and therefore cooled, to within a thousandth of a degree of absolute zero. Theorists had suspected that at temperatures that frigid, helium atoms just might engage in diaphanous liaisons, but no experiments yet have clearly spied them.

Assuming others replicate the Minnesota experiment, says University of Chicago physical chemist Donald Levy, editor of the *Journal of Chemical Physics*, the work shows that the helium-helium dimer "is the most weakly bound molecule that one will ever have." How weak? About 10,000 times weaker than the next weakest chemical bond, which links pairs of neon atoms—helium's closest chemical kin. Calculations suggest that helium's weakling bonds would leave the 2 atoms about 55 angstroms apart, on average, enough space to accommodate a good 50 hydrogen molecules lined up like minuscule barbells.