RANDOM SAMPLES

edited by CONSTANCE HOLDEN

Red Alert for Plants

The first comprehensive global study of the major plant families, released around the world last week, warns that more than one in 10 of the world's plant species are on the brink of extinction. A 15-year collaboration involving hundreds of researchers worldwide has found that 34,000 species—out of an estimated total of 270,000—are at risk.

The new Threatened Plants Report, known as the "red list" of the World Conservation Union, relates that the highest numbers of known endangered species are in the United States, Australia, South Africa, Turkey, and Mexico. Some families are in a particularly bad way: A third of lily species and 15 of 20 yew species could soon disappear. An "appalling" 29% of plant species in the United States are in peril, says John Sawhill, director of the U.S. Nature Conservancy. Close to one-third of members of the palm family are in trouble, as are one-third of a family of important timber trees in Southeast Asia, the Dipterocarpacae.

There are still huge gaps in the picture. Researchers have surveyed only about half the plant species thought to exist, and data in some regions—particularly Asia, South America, and Africa—are seriously lacking. "As information increases, the situation will likely be shown to be worse," says Harriett Gillett, one of the report's authors. Officials hope the new list will push countries into beefing up plant conservation plans.

DAN SUZIO/PHOTO RESEARCHERS

Days numbered? Rare palm of Bolivian Andes, *Puya raimondii*.

Ice's Tricky Surface

Physicists have for the first time gotten a clear molecular snapshot of an icy surface, revealing a layer of water molecules that wave back and forth like underwater plants. This, they report in the 23 March *Physical Review Letters*, helps show why ice, by offering a surface that passing chemicals will stick to, plays such an active role in destroying atmospheric ozone.

Researchers have tried to probe ice by bouncing electrons off its surface, but that failed to produce clear images, because electrons tend to burrow into the ice before ricocheting. So researchers at the Max Planck Institute for Fluid Dynamics in Göttingen, Germany, experimented with bulkier helium atoms, which just glance off the surface. By shooting beams of helium atoms at a thin sheet of supercold (–243°C) ice, the team was able to reconstruct the positions of the surface layer of ice molecules. And by measuring the energy lost by the helium atoms, they were able to see wobbling waves of molecules on the surface. Even though the molecules remain anchored, "the surface is really moving very smoothly," like ripples on a pond, says physicist Alexander Menzel.

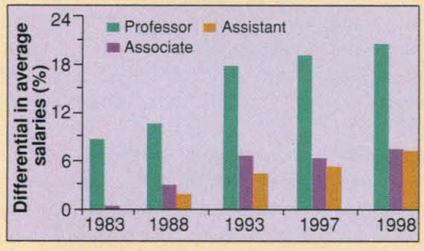
"It's a very important finding," says physicist John Wettlaufer at the University of Washington, Seattle. It shows how ice crystals in the upper atmosphere could act as a trap for passing molecules, such as hydrochloric acid, because the waves would allow the chemical to be absorbed rather than bounced off. And being combined with ice is thought to enhance hydrochloric acid's ozone-destroying abilities.

Faculty Salaries Up

Faculty salaries are looking considerably perkier this year than last, according to the latest annual survey by the American Association of University Professors in Washington, D.C. But the salary gap between top universities and the rest of the pack continues to widen.

The survey found the largest real increase in faculty salaries since 1987: 3.4% between 1996–97 and 1997–98. Adjusted for inflation, that's 1.7% for everyone and 2.6% for faculty at the same institution both years. The growth "more than overcomes last year's dismal decline" (an inflation-adjusted 0.3%), writes economist Linda Bell of Haverford College in Pennsylvania. But it fails to reverse a 25-year slide that has brought real salaries down by 4.4%.

Bell also writes that "there is evidence of rising inequality" among institutions. Faculty at Ph.D.-granting universities have a "large and growing" advantage: For example, a professor at a private doctorate-granting university averages $95,023 a year, while one at a 4-year school earns $64,784. The public-private divide is also growing (see chart). Figures are in the March-April issue of *Academe*.



Income gap. Salary advantage at private versus public institutions keeps growing.

Rehashing TIMSS

Some observers have been trying to rationalize away the bad news from the latest international comparisons of student math and science skills. But they would do better to heed the message, according to a panel convened last week at the Brookings Institution in Washington, D.C.

Recent results from the Third International Mathematics and Science Study (TIMSS), comparing the performance of 12th graders in 21 countries on general science literacy, advanced math, and advanced physics, ranked U.S. students near the bottom (*Science*, 27 February, p. 1297). But some critics—such as psychologist Gerald Bracey, former director of testing for the Commonwealth of Virginia—argue that TIMSS pitted younger U.S. students against older elites of other countries. Bracey asserts, for example, that in the math test, U.S. kids—some yet unschooled in calculus—were being compared to foreign kids "in highly focused multiyear programs."

At the Brookings meeting, TIMSS director Albert Beaton of Boston College said U.S. test-takers do not come from a less selective population and noted that countries such as Sweden have even higher proportions of their teens in school. Furthermore, he said, only 64% of U.S. 12th graders—compared with 74% in other countries—took the general science test. And the advanced math test was taken by only 14% of eligible U.S. students—compared with 19% of foreign test-takers.

U.S. TIMSS director William Schmidt of Michigan State University said the average U.S. subject was 6 months younger than the foreign teens, but that almost everyone had the same number of years (12) of education. Besides, he said, Australian students were younger than U.S. kids but did better, while South Africans were older but did worse. Said Beaton: "I think we would ignore these results at great peril."