RANDOM SAMPLES

edited by CHRISTOPHER ANDERSON

Tales of the Coming Mega-Greenhouse

The debate over greenhouse warming seems at times to be a tad on the subtle side, pivoting on such questions as: Will the globe warm 1, 2, or 3°C during the next century as the burning of fossil fuels doubles the atmosphere's concentration of carbon dioxide? But then along come climate modelers Syukuro Manabe and Ronald Stouffer of the National Oceanic and Atmospheric Administration's (NOAA) Geophysical Fluid Dynamics Laboratory with a distinctly unsubtle reminder that carbon doubling is only the beginning.

Manabe and Stouffer went beyond the 100-year mark to project a world 500 years in the future. Reporting in the 15 July issue of *Nature*, the researchers say that their model calls for some drastic changes. In the model, the eventual quadrupling of carbon dioxide during the next 140 years implied by current trends would drive global temperatures up a hefty 7°C.

Most disquieting, though, is the behavior of the model's ocean as the temperature rises and precipitation patterns change. Within 50 years of the start of the prescribed 140-year-long rise of carbon dioxide, the worldwide "conveyor belt" of currents that flushes the deep sea with oxygen-rich waters, lifts nutrient-rich deep waters to the surface, and carries heat toward the poles, begins to slow. The researchers kept the simulation going and by 250 years the conveyor belt nearly grinds to a halt at 10% of its former flow and never recovers.

The repercussions could be staggering. Oxygen levels in the deep ocean would fall, perhaps eventually killing off much of the life there. Even worse, a nearly stagnant deep circulation could only mean further climate disruptions as atmospheric carbon dioxide, normally removed from the air by deep-ocean "carbon sinks," instead piles up in the atmosphere, enhancing global warming even further.

L. L. T. RHODES/ANIMALS ANIMALS

Family ties. Whose ancestor is the coelacanth?

Fishing for Missing Links With a Chain

In 1938, an angler in South Africa landed a living fossil: a coelacanth, previously known only in the form of fossilized bones. The catch gave evolutionists a chance to test a theory that the coelacanth might be the "missing link" between bony fish and the first vertebrate to make it out of the water. Since then, anatomical and genetic studies have suggested that coelacanths, odd creatures with oily bladders that might have evolved into lungs, indeed are close kin of land vertebrates. But a new study casts doubt on this, suggesting that coelacanths' family ties may go in another direction. Ancestral coelacanths, the research indicates, may be the form by which bony fish evolved from sharks and other cartilaginous fishes more than 400 million years ago.

The latest evolutionary analysis comes in a study of gene organization in coelacanths (*Latimeria chalumnae*), published earlier this month in the *Proceedings of the National Academy of Sciences*. The research team, led by geneticist Gary Litman of the University of South Florida and All Children's Hospital, found that coelacanths appear to have a whole new class of immunoglobulin genes—a fourth type of organization, different from those in most vertebrates, birds, and sharks. Litman's team found that genes coding for the coelacanth's immunoglobulin heavy-chain variable region are clustered around other immunoglobulin genes—just as they are in sharks but unlike the gene organization in land vertebrates and bony fish. But like those animals—and unlike sharks—these genes recombine during development. With genetic features of both cartilaginous and bony fishes, Litman argues that coelacanths may be a transitional form between the two.

Gallo Case Spawns New Drama

There are some highly dramatic elements in the tangled story of National Institutes of Health (NIH) researcher Robert Gallo and the discovery of the AIDS virus—indeed, some would say it's a Greek tragedy—and now the tale has actually taken a turn in the footlights. *H.I.V., A Parable*, a play penned by Robert Martin, an NIH molecular biologist when he's not writing for the theater, had its first public airing at a reading in Washington last week.

Despite the title, there's no explicit mention of Gallo or the HIV controversy in the play, which is about a U.S. cardiology researcher accused of stealing an idea that leads to a blockbuster heart drug. But the parallels are barely hidden. Along with the accused lab chief, there is an assistant who did most of the lab work and is also under suspicion, an investigative reporter, and a foreign scientist who claims to have first discovered the secret of the drug.

Here's how Martin's play ends: The assistant actually did get the idea from the foreign scientist, but the lab chief thought he arrived at it independently. The reporter is goaded by an aggressive editor into calling it outright theft, ruining the careers of both scientists. Everybody's a bit to blame, but it's hard to call it a crime.

That kind of modern ambiguity probably didn't appeal to some of the audience members: half a dozen of the federal and congressional investigators who are preparing the government misconduct case against Gallo. Their tastes may run more toward a classic courtroom drama with a clearcut verdict—innocent, or even better, guilty.

Krebs Nominated for Top Energy Research

On 15 July President Clinton made official what everyone at the Department of Energy (DOE) has expected for months: Martha Krebs, an associate director at the Lawrence Berkeley Laboratory (LBL), is Clinton's pick to head DOE's energy research office.

Once Krebs is confirmed by the Senate—and no problems are foreseen there—she'll take control of a $3 billion-plus budget, including most of the government's civilian physics funding and the Superconducting Super Collider (SSC). These days that's a job that requires as much political savvy as scientific experience, which weighs in Kreb's favor: Until she moved to LBL in 1983, she spent 6 years on the House of Representatives science committee, ending as the staff director of the subcommittee on energy development and applications.

Indeed, the only concerns about Krebs come from academic scientists, who worry about her lack of research experience. Although Krebs earned a Ph.D. in theoretical physics in 1975, she's been in management or government ever since. But with physics facing budget cuts and the SSC under fire for mismanagement, those qualifications might be more relevant than years spent searching for particles that may or may not exist.