RANDOM SAMPLES

edited by CONSTANCE HOLDEN

Sorting Out the Tick Tangle

Research on a puzzling trio of tick-borne human diseases is likely to benefit from the successful isolation of one of the most deadly agents, announced last week by a group of scientists at the University of Minnesota. A team led by Jesse Goodman of Minnesota reported growing a lab culture of the bacterium *Ehrlichia*, which has caused death in four of 80 human cases identified so far.

Ehrlichia is carried by deer ticks, which also transmit Lyme disease (*Borrelia burgdorferi*) and a parasite, *Babesia*, that causes babesiosis. The new and still-nameless *Ehrlichia* strain invades granulocytic cells, causing fever, aches, and flulike symptoms. This granulocytic disease has been found as a coinfection in a number of Lyme and babesiosis patients.

Some researchers, including Peter Krause of the Hartford Hospital and Samuel Telford of the Harvard School of Public Health, suspect that coinfection with *Babesia* or *Ehrlichia* worsens the symptoms of Lyme disease—and may help explain why it has been so difficult to diagnose and treat (*Science*, 13 October 1995, p. 228).

How all these organisms interact can be explored in more detail now that Goodman has grown a strain of *Ehrlichia* taken from patients in Minnesota and Wisconsin, as reported in the 25 January *New England Journal of Medicine*. Goodman expects the work will help sort out the tangle of tick-borne diseases, leading to improvements in diagnostic tests, therapies, and epidemiology. The University of Maryland, where Goodman's collaborators work, has filed a patent application on the bacterial cultivation technique.

Phillip Baker, who oversees funding of this research at the National Institute of Allergy and Infectious Diseases, says the ability to grow *Ehrlichia* should "supply large quantities of highly purified DNA, which can be used to isolate genes" for use in developing vaccines and tests. The work is "very important" for basic research as well, Baker says, because it "enables us to do very detailed studies of how this organism infects cells."

Mark of distinction. This U.S. stamp issued on 1 February honors marine biologist Ernest E. Just. Noted for experiments related to invertebrate fertilization, Just taught at Howard University from 1907 to 1941 and headed its zoology department for 29 years. Just is the 19th honoree—and second research scientist—in the U.S. Postal Service's Black Heritage Stamp series.

Getting to Know Your Network

U.S. universities have been in a sustained frenzy of computer networking over the past decade or so. But schools have no quantitative idea how this revolution has affected campus life and learning, according to Charles McClure, professor of information studies at Syracuse University in New York. University people will tell you "we have to have these networks; they're absolutely essential," he says. But those same people have a hard time when it comes to explaining why. So McClure, with colleague Cynthia Lapata and $143,000 from the Department of Education, is about to publish the results of a 15-month study which, he says, will serve as a "manual" to help universities evaluate this new dimension in education.

It's going to be an important guidebook, says Dave Carr, manager of communications systems at the State University of New York, Buffalo. "People need to find out exactly how useful all this money and time put into networks is to the students," he says.

The study, "Assessing the Academic Networked Environment: Strategies and Options," involved site visits to research universities and consultations with campus experts. It was "an incredibly much more difficult task than anyone thought when we began it," says McClure. "Performance measures and indicators of quality of a campus network turn out to be extremely difficult" to devise. One major problem was that networks are so diverse that meaningful comparisons were hard to draw. So instead of a universal yardstick against which schools can evaluate performances, the manual offers a range of assessment techniques to apply to the individual academic setting.

The manual supplies tests of "quantitative performance indicators" (example: the accuracy of information supplied by the "help desk" at a campus computer center); qualitative indicators (user satisfaction as assessed by methods such as focus groups); and a model user survey that can be customized for an individual campus. The manual should be available in early March. For information, send an e-mail message to kreschen@istweb.syr.edu.

Did Neutrinos Do In the Dinosaurs?

What with ozone depletion, greenhouse warming, and possible collisions with stray asteroids, some people might say we've got enough to worry about. Guess again. In an article in the 5 February issue of *Physical Review Letters*, nuclear physicist Juan Collar speculates that rare bursts of neutrinos—massless, chargeless particles—might be capable of killing off life on Earth and thus be responsible for at least one of the planet's mass extinctions. Other scientists are skeptical.

Collar, who works at the University of Paris, points out that a nearby exploding or collapsing star would release a storm of neutrinos. Although these particles rarely interact with matter of any kind, Collar speculates that such a stellar event could produce a "neutrino bomb" made of enough neutrinos that some would hit the nuclei of biological cells. There they would damage the DNA, causing mutations and cancer. A large enough blast might affect enough organisms to show up as an extinction. Astrophysical evidence suggests that one or two such stellar explosions might have gone off in the vicinity of our solar system in the past half-billion years.

Collar readily allows that his theory is "highly speculative." Others agree. For starters, there is little data indicating that neutrinos can affect cells. David Raup, a paleontologist with the University of Chicago, adds that there is no need to reach so far for an extinction theory when more plausible ones have already been produced by earth scientists: "We already know a number of things that can produce the kind of environmental shock that might produce mass extinctions and that are testable."

Collar says he hopes radiobiologists will at some point get around to testing his theory by bombarding some cells with neutrinos. Meanwhile, he is already moving ahead with an even more speculative theory, to be published soon in *Physics Letters B*. This one suggests that clumps of dark matter known as WIMPS—for Weakly Interacting Massive Particles—passing through the solar system might also have a hand in extinctions through cell mutations. This time, notes Collar, "we're dealing with particles which may not even exist."