RANDOM SAMPLES

edited by CONSTANCE HOLDEN

Ribozyme Rights

When Thomas Cech at the University of Colorado and Sidney Altman at Yale University discovered and demonstrated that RNA can act as an enzyme, the news prompted prophecies of a new kind of genetic engineering—one based on RNA instead of DNA. Now the two scientists, who shared the 1989 Nobel Prize for their separate discoveries, will also share the potential profits.

Early last year Cech and the University of Colorado received an unusually broad patent for the use and synthesis of enzymatic RNA (*Science*, 1 February, p. 521); now it's Altman's turn. Last month, the patent office awarded Altman and his colleagues at Yale a patent for their technique of cleaving target RNA with an enzyme called RNase P., composed of both RNA and protein. Altman, who was the first to show that transfer RNA could be cut by RNase P, and his colleagues Anthony Forster and Cecilia Guerrier-Takada recently came up with a technology for tagging a piece of target RNA so that the RNase P will be tricked into cleaving it.

The technology has been licensed to Innovir Laboratories Inc. in New York City, which is using the method to design new RNA-based drugs that could cleave the RNA of viruses and, eventually, block the synthesis of disease-causing proteins. Cech, for his part, has sold the exclusive rights for his patent to the United States Biochemical Corp., which has formed a biotech startup called Ribozyme Pharmaceuticals Inc.

PAUL J. CONRY/HAWAII DEPT. OF LAND AND NATURAL RESOURCES

Hawaiian crow. Perched on the brink of extinction.

A Caw for Action on the 'Alala

The National Research Council (NRC) isn't in the habit of setting up a committee for every disappearing bird that comes down the pike. But the 'Alala, or Hawaiian crow, was deemed especially significant not only because it presents a difficult salvage problem but also because it is a "classic indicator species" for a threatened ecosystem—in this instance, the mountainous, lava-ridden region on the western coast of Hawaii.

Unlike mainland-style crows, who get along fine on farmland, the 'Alala has specialized needs, nesting in tall trees and living off fruit-bearing plants. Now, in large part because of the deforestation caused by the rapid spread of cattle ranches, the crow needs an immediate program of intensive care, says the NRC panel, headed by W. Donald Duckworth, director of Honolulu's Bishop Museum. The wild flock has dwindled to only 11 birds living on a 64,000-acre ranch. And there are only 10 birds in captivity. The panel warns that the wild birds are in danger of dying out in as little as a decade.

Other birds facing the same plight—like the California condor—have been caught and bred in captivity. But in Hawaii there's been a "big controversy" over the best strategy, says panel member Hampton L. Carson, a University of Hawaii geneticist. The panel decided that captive-breeding would be a bad idea because it would not supply the immediate boost in numbers that is needed, and, says Carson, it produces "a very different bird" with dubious survival skills.

So the panel instead recommends a practice known as "double-clutching"—collecting the first-laid eggs from wild nests and hatching them in the laboratory, thereby protecting them during a crucial stage. The newly hatched birds would then be either added to the captive group or released in the wild; meanwhile, the parents would produce more eggs. "Almost all crow-like birds will lay a second set" when they lose the first, says Carson. As for the larger problem—habitat destruction—the report calls for the establishment of at least one new forest preserve on the coast, as well as incentives to farmers to set aside bird preserves.

Clues to a Tin Age

We learn in school about the great ages of mankind: Stone, Bronze, and Iron. But who ever hears of the Tin Age? Yet the Bronze Age was just the Tin Age by another name: This soft, silver-white metal is, with copper, one of the two ingredients of bronze. One reason for tin's neglect may be that archeologists have had few clues about how people concentrated the metal from tin-containing ore.

That may change, however, with the discovery of a tin processing site that dates back to roughly 2500 B.C.—the oldest ever found—in the mountains of south-central Turkey. At the recent Materials Research Society meeting in San Francisco, Pamela Vandiver of the Smithsonian Institution's Conservation Analytical Laboratory reported finding fragments of crucibles and other artifacts in a crumbling walled compound at a site called Goltepe. Vandiver and her colleague Aslihan Yener believe the items were used to extract tin from cassiterite, a local ore of tin oxide.

As the researchers have reconstructed the process, the ancient metallurgists first ground up the ore, then washed or winnowed it to separate out the cassiterite. The resulting tin-enriched powder, along with other materials like limestone, magnetite, and arsenic trioxide, was placed in the crucibles and fired up with charcoal. Temperatures of more than 1200 degrees Celsius are normally needed to extract the tin, says Vandiver, but the arsenic trioxide probably lowered that temperature to about 950°C.

With the Goltepe site, says Vandiver, "we're slowly trying to build up a picture of third millennium technology, particularly pyrotechnology." To test that picture, a group will go to the site this year to try and recreate the process, making tin as early technologists might have thousands of years ago.

Crafoord Prize Targets Early Life

Paleontologist Adolf Seilacher of Yale University and the University of Tübingen is to receive this year's Crafoord Prize. The prize, administered by the Royal Swedish Academy of Sciences, is for areas not covered by the Nobel Prize and carries Nobel-level remuneration—or about $360,000.

JOY BUSH/YALE

Seilacher. Celebrating prize news.

Seilacher, who earned his Ph.D. at Tübingen in 1951, has specialized in interpreting trace fossils—preserved tracks in ocean or lake sediments—to reconstruct the behaviors of extinct species. His methods "have greatly influenced research on evolution all over the world," says the academy.

Seilacher told *Science* that he plans to use the prize money mostly on Precambrian research, specifically in northern Australia, where there are traces of fossils

that have been claimed to be 1.6 billion years old—at least three times the age of the oldest known larger forms. Seilacher also plans to do something about the territoriality that marks his profession. "Precambrian research has been held up by people sitting on their specimens and not sharing this information with others," he says, as well as by the fact that researchers espousing differing interpretations tend to divide up into hostile camps. So he has risen above the fray by inviting a colleague with whom he differs—Australian-born paleontologist Bruce Runnegar of the University of California, Los Angeles—to join him on his next project.

The prize will be presented in Stockholm on 1 October.

Open Season on Depression

Mental illness may be taking another step out of the closet with a project recently launched by a Harvard psychiatrist: the first nationwide free screening program for depression. Douglas Jacobs, who practices at McLean Hospital in Belmont, Massachusetts, says depression is a major public health problem, afflicting an estimated 10 million Americans in a given 6-month period, but only one-third of sufferers get diagnosed or treated for it.

So in 1990, Jacobs started a pilot program at McLean, which was expanded last year to 90 facilities in 44 states. About 5000 people attended lectures and discussions on depression last year at health facilities; 3000 of them filled out self-report forms and had short meetings with mental health professionals who told them about treatment options. Jacobs says half the people who attended the screening had never had any treatment for depression, but the self-report forms indicated that half were probably clinically depressed.

Plans are to expand greatly the next screening, scheduled for October. With the support of the National Depressive and Manic Depressive Association, a patient advocacy group, the organizers hope to reach up to 400 locations—including nonhealth facilities like shopping malls and libraries—and screen up to 20,000 people.

"It's time that psychiatry not be behind closed doors," says Jacobs. He's already thinking about the next advance: a "national substance-abuse screening day."

World on a Disc

You don't need a trip into orbit to get a view of the globe and its changes. Thanks to a new set of software, billed as the first "interactive global change encyclopedia," students and other users will be able to explore global change just by turning on a computer.

The global overview comes from GEOSCOPE, a PC-compatible, computerized collection of satellite images and environmental facts and figures. It was unveiled last week by Canadian government and industry at the International Space Year global education conference in Washington, D.C. Scientists at the Canadian Space Agency, the Canadian Centre for Remote Sensing, and several Canadian firms have put on disc more than 150 data sets that include vibrantly colored satellite images of everything from ozone concentration to the evolution of forests in Zaire.

The software package allows the user to animate some of the image sets to view changes over time, as well as to call up images and data about specific geographic regions: a digitized photograph of fishing boats on the Bay of Bengal, for example, or a summary of the El Niño-related flooding that periodically plagues Bangladesh. And if students tire of looking at average densities and colorized effluents, they can turn to GEOSCOPE's "philosophy workroom," where they can ponder the words and images of oracle-scientists ranging from Galileo to Carl Sagan.

All this fits on a single IBM-compatible floppy disc, although to access the complete image library, users will need a CD-ROM reader. English and French versions of the encyclopedia are expected to hit North American schools in November, with versions in German and other languages to come early next year.

Canadian officials estimate that the entire program will cost $200. For more information, contact the Canadian Space Agency, fax #514-496-4220.

Court Rules for NIH

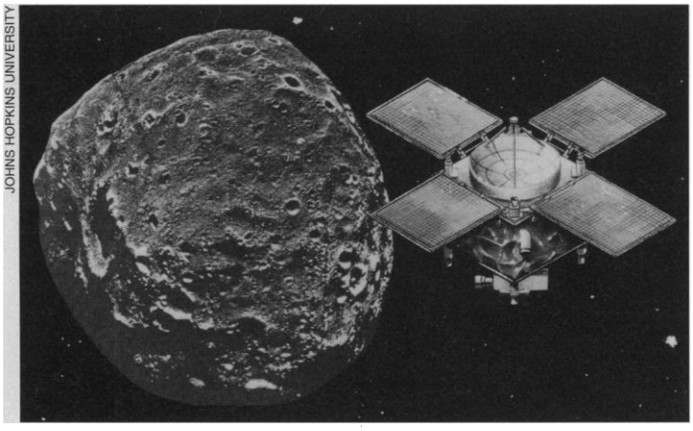
After a federal court judge ruled in December 1990 that the government's rules for investigating alleged scientific misconduct were illegal, the Public Health Service (PHS) began an extensive effort to revise its procedures. Ironically, though, a federal appeals court in Chicago has now overturned the earlier judgment.

The legal action revolves around an NIH investigation of James Abbs, a University of Wisconsin neurologist accused of forging graphs in a paper for the journal *Neurology*. Abbs sued NIH, claiming that the probe violated his due process rights and that the procedures were illegal. He won a partial victory: The court upheld his complaint about the rules, but rejected his due process concerns.

Both parties appealed the decision, and on 1 May, the court ruled against Abbs on both counts. The opinion, by Judge Richard Posner, explained that because Abbs had already "won" his case by forcing NIH to reconsider its procedures, he had no right to appeal the due process judgment. The court further argued that Abbs has suffered no demonstrable harm from NIH's investigation and therefore had no grounds to challenge its rules.

NIH has not said whether it will continue the Abbs investigation. But the PHS revision of its rules—which have stirred criticism from many quarters—is unlikely to be derailed by the court ruling.

Per Ardua ad Asteroid



JOHNS HOPKINS UNIVERSITY

It looks like all systems go for NASA's Near Earth Asteroid Rendezvous (NEAR) mission, which will send a small spacecraft on a year-long inspection of an asteroid from as close as a mile away. NASA has just selected the Applied Physics Laboratory at Johns Hopkins University to design the spacecraft, which is to be launched in 1998. Two years later it will begin orbiting Nereus, one of the family of "near-Earth" asteroids (as opposed to the "Main Belt" asteroids that lie farther from the sun.) The asteroid trip is part of NASA's slimmed-down look for the '90s, which in the planet department features "small planetary missions" that are supposed to be relatively short-term and inexpensive. The first of these is the Mars Environmental Survey Pathfinder, to be launched in 1996.