RANDOM SAMPLES

edited by CONSTANCE HOLDEN

Saving Forests With Their Own Medicine

Conservationists have learned that appeals to the pocketbook may save more hectares of tropical forest than any pleas based on ethics or aesthetics. But putting monetary values on environmental goods has proven a daunting task, and few have tried it. Two who have are ethnobotanist Michael J. Balick of the New York Botanical Garden's Institute of Economic Botany and resource economist Robert Mendelsohn of the Yale University School of Forestry and Environmental Studies. The pair have just published what they claim is "the first study to quantify the value of tropical forest as a source of locally used traditional medicines."

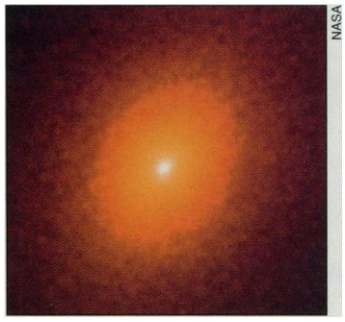
Balick and Mendelsohn conducted their study in the Central American nation of Belize, where traditional practitioners minister to most of the primary health care needs of rural people. The researchers conducted inventories of the plant material in two plots totaling about half a hectare by harvesting everything with value as traditional therapy. They then weighed the collection and calculated, on the basis of what local pharmacists and healers pay for unprocessed materials, what the net revenue would be after subtracting farmers' expenses. The answer: between $564 and $3054 per hectare. Over the long term, management of the land for this purpose compares favorably with alternative land uses such as agricultural crops and pine plantations, they report in the March issue of *Conservation Biology*.

PABLO COCOM

Tropical forest acumen. Ethnobotanist Balick with Belizean healer.

Balick and Mendelsohn say that within a 50-hectare plot, a farmer could make a good living indefinitely by harvesting one hectare per year. But they say the per-hectare value would be even greater if farmers adopted sustainable harvesting techniques—like gathering leaves and peeling small strips of bark—that would allow continuous extraction of material.

Over the next 3 years Balick and Mendelsohn, with participation by Belizean students and researchers, will be trying to learn more about the potential of nondestructive harvesting methods. Balick notes that "most of the publicity about saving the rain forest as a source of drugs talks about returns that are far in the future." But "conservation in many cases ultimately depends on decisions by small farmers" who need to know today how they would benefit.



NASA

A black hole lurking in M32?

A 100% Certifiable Massive Black Hole?

Even though theoretical astrophysicists take for granted the existence of massive black holes, which weigh millions and even billions more than run-of-the-mill black holes, observers in the field are struggling to come up with proof of just one of these exotic monsters. So when Tod Lauer, an astronomer at the National Optical Astronomy Observatory in Arizona, announced at a NASA-sponsored press conference last week that he's "nearly positive" there's a massive black hole in the center of a nearby galaxy known as M32, he gave black hole boosters something to cheer about.

Lauer's group used high-resolution images from the Hubble Space Telescope to show that M32's light increases in a sharp "cusp" toward the center of the galaxy—exactly what you would expect from a black hole weighing 3-million solar masses as it sucks in nearby stars. Lauer's group also saw this effect in galaxy M87 (*Science*, 31 January, p. 536). Corroborating the Hubble measurements on M32, however, are ground-based observations that show that the velocity of stars near the galaxy's center increases more sharply than expected, as if they're being whipped around by a huge unseen mass. "Without a black hole at the center it would be difficult to explain this," says Lauer. Experimentalists have never before had the image resolution to see these structural signatures of a black hole.

The weight of the evidence is even beginning to pull in such skeptics as Pennsylvania State University theorist Daniel Weedman. In the past, he has accused scientists of believing in massive black holes because they can't otherwise explain the enormous energy streaming from quasars and some galactic centers. (Vast amounts of energy escape from objects as they plummet into black holes.) Even now, he says: "I'm not as ready as others to get on the black hole bandwagon." But Weedman agrees with other theorists that these latest observations add a more direct line of evidence to the claim.

$10 Million for Ukraine Scientists

The State Department has announced it will help fund an international science center in Kiev, the capital of Ukraine, in addition to the International Science and Technology Center already planned for Moscow (*Science*, 27 March, p. 1632). That will add $10 million to the $25 million already pledged for the Moscow center.

The new center is to serve as "a clearinghouse for proposals for civilian projects for weapons scientists and engineers in Ukraine," according to the State Department, which notes that many of the people who used to be involved in developing the former USSR's ballistic missile systems live in Ukraine.

The announcement followed a meeting between State Department coordinator Robert Gallucci and Ukrainian scientists on 2 April. The $10 million pledge is part of $400 million Congress allocated last year to help the former Soviet Union dismantle its nuclear arms apparatus. Germany and Japan have also promised support.

El Niño Still on The Prowl

El Niño had its way with U.S. weather this winter, removing some of the usual chill but devastating parts of Texas with record floods, much as forecasters predicted (*Science*, 24 January, p. 402). With the coming of spring, though, El Niño-induced aberrations of U.S. weather are expected to fade. But that doesn't mean El Niño is gone, as residents of tropical regions are about to find out.

Anyone depending on the coming tropical rainy season could be facing disaster if El Niño-based prognostications from the National Weather Service's Climate Analysis Center (CAC) pan out. In the center's latest monthly bulletin, editor Vernon Kousky presents not official predictions but an informal "outlook." During the next 6 months, he says, Northeast Brazil, Central America, and India are liable to find their vital rains falling short of normal or even failing altogether. Indonesia and the Philippines are already dry and "are likely to see a continuation" of that dryness during the next 6 months.

On the flip side, says Kousky, "heavier than normal rainfall is likely over southern Brazil and Northeast Argentina, as well as over the central tropical Pacific."

It might be worthwhile to put stock in CAC's predictions—their

November forecast of last winter's U.S. weather, which looked so good in mid January (*Science*, 24 January, p. 402), held up well. Particularly robust was the center's 3-month precipitation forecast, which included heavy rains along the Gulf coast that would have made El Niño proud.

Thousands of Insects 'Enroll' at Yale

Thanks to the U.S. government's endless battle against the gypsy moth, taxonomists and parasitologists have an important new resource. Yale's Peabody Museum has added 85,000 insects, ranging from pinhead-sized parasitic wasps to hummingbird-sized moths, to its already vast collection of more than 1.5 million specimens.

What the additions have in common is that all were collected in Connecticut and Massachusetts by U.S. Forest Service scientists, who combed the states' woodlands for decades looking for possible predators, parasites, and competitors of the gypsy moth. Introduced from Europe by a collector in 1869, the gypsy moth has become the most important insect pest in the forests of the Northeastern United States.

As an effort to find controls for the gypsy moth, the dragnet was not particularly effective, but it does supply an excellent survey, says Peabody Museum chief entomologist Charles L. Remington. The collection, however, was stored for years at a former Nike missile site, inaccessible to all but a handful of scientists.

Following lengthy negotiations with the U.S. Northeastern Forest Experiment Station and the Smithsonian Institution, the bugs have now alighted at Yale. "Because most of them were collected between 1910 and 1940 at sites that were carefully recorded, researchers will be able to study their geographical spread and genetic changes in the past 50 years," says Remington. That's important because in the old days, the strategy of choice was massive DDT spraying. Although that "did not have much impact on the gypsy moth," says Remington, it did "devastate the largest insects in several groups." Lost in the Northeast were, for example, the magnificent Royal Walnut and Yellow Emperor moths.

"Yale already had one of the largest insect research collections in the world, but we had a gap which is now filled," says Remington.

MICHAEL MARSLAND/YALE

Mothballed. Peabody's Remington with case displaying innocent victims of the war on Gypsy Moths.

Overhaul at the FDA Begins

Just 5 months after the Bush Administration prescribed some stiff medicine for speeding up the Food and Drug Administration's (FDA) approval of new drugs, the agency is ready to give the therapy a try—over the objections of some senior FDA officials.

Last week, Vice President Dan Quayle announced that the FDA is launching four new initiatives that would put in place the key changes recommended in November by the President's Council on Competitiveness, which Quayle heads. The relatively noncontroversial ones are speeding the approval of drugs for life-threatening illnesses such as AIDS; making experimental treatments for AIDS available before a new drug is approved; and setting international standards for animal testing of new drugs.

But then comes the blood-boiler: Quayle's team wants the FDA to hire outside contractors to help review clinical data in order to speed the processing of new drug applications. However, senior medical officers at the FDA have complained that outside contractors might not be independent enough from the drug companies. Nevertheless, FDA commissioner David Kessler has decided to move forward with a "pilot" external review program, and is planning to sign a contract soon with Bedford, Massachusetts-based MITRE Corp. to conduct and manage the reviews of new drug applications.

PATRIOTISMS

To "intercept," according to *Webster's Dictionary*, is "to take, seize, or stop...before arrival at the destined place." But last week, in reviewing the U.S. Army's upbeat claims about the performance of the Patriot missile during the Gulf War, Brigadier General Robert Drolet proposed a new meaning to members of a congressional subcommittee. In Armyspeak, it seems, an intercept is a close encounter.

At the hearing, the Army lowered its estimate of the Patriot's record: Instead of killing more than 80% of the Scud warheads it met in Saudi Arabia, the Army now says it got between 40% and 70%. This was a partial victory for MIT professor Ted Postol, who has been claiming since last year that the Patriot may have missed most of its targets (*Science*, 8 November 1991, p. 791). Perhaps wishing to rub it in, Representative John Conyers (D–MI) asked the Army's Drolet to explain whether the president had been correct when he said in 1991 that Patriots had killed 41 out of 42 Scud warheads they had targeted. Drolet said the claim was still correct because in talking about the fate of the Scud warheads, the president "did not say 'killed' or 'destroyed,'" but, instead, "he said 'intercepted.'" Playing dumb, Conyers asked, What did the Army mean by "intercept?" Drolet's response: A "Patriot and a Scud passed in the sky."