

RANDOM SAMPLES

edited by CONSTANCE HOLDEN

Microbe Attacking Coral Reefs

Tropical reefs in the South Pacific are being assaulted by a mysterious orange microbe, accord-



Mystery affliction. Pink coraline algae with 2-centimeter-wide orange slimy band. Dead alga is bleached white.

ing to two marine botanists who work at the Smithsonian Institution Museum of Natural History in Washington, D.C.

Mark and Diane Littler first noticed the organism in the Cook Islands, 600 miles west of Tahiti, and now believe it is afflicting reefs throughout the South Pacific to Papua New Guinea, a distance of 3600 miles. "We've just now sent out photographs and a questionnaire to ask people if they've seen it," says Mark Littler. The microbe operates by killing coraline algae, living organisms that cement dead corals together to make reefs.

The Littlers were diving in the Cook Islands last year when they first spotted white splotches on the reefs where dead algae had been bleached to white skeletons. Then, says Littler, "we saw bands of this orange slimy material." Back in the lab, they observed a sample under a scanning electron microscope and saw that it was a strange bacterium.

They believe that what they have dubbed "coralline lethal orange" is spreading rapidly. Two years ago they saw no trace of it in Fiji, but it was there in abundance when they returned this summer. Littler says the disease not only kills coraline algae but hastens reef erosion in another way: The skeletons become covered with a soft kind of "turf" algae that at-

tracts fish, which graze on it, scraping away the reef substrate.

The Littlers now have microbiologist Anwarul Huq of Rita Colwell's lab at the University of Maryland analyzing seawater samples containing the bacterium. Huq says he has cultured 11 organisms; the next step is to introduce coraline algae and see which one attacks it.

Littler says he does not have an explanation for the sudden appearance of the lethal orange microbes. He adds: "Diane and I have been studying tropical reefs for about 30 years each. We've never seen anything like this."

Free Speech vs. Journal Rankings

The principle of free speech has dashed an attempt by scientific publishers to counter bad press about their journal prices. Last month, a federal judge in Manhattan ruled that the First Amendment protected the American Institute of Physics (AIP) and the American Physics Society (APS) when they published studies that made several journals look like a poor deal.

The suit, filed by Gordon & Breach and Harwood Academic Publishers, sprang from two articles that appeared in the late 1980s in AIP's *Physics Today* and the APS' *Bulletin*. The studies, by physicist Henry Barschall, ranked some 200 journals by price in relation to size and by how often their papers were cited. Several published by Gordon & Breach and Harwood fell near the bottom of the list.

The disgruntled companies filed a complaint against APS and AIP, arguing the articles were "a cynical promotion" and violated laws against false advertising. But Judge Leonard Sand ruled that publication of the studies was closer to "an academic examination of a significant public issue" than to commercial speech.

However, Sand said other uses of the articles—as handouts at a librarians' conference and in other promotions—are commercial speech, and the court could still decide that the rankings were misleading and therefore false advertising. Leslie Lupert, a member of the New York law firm representing Gordon & Breach, says "this case is still very much alive."

Gordon & Breach has also sued APS and AIP in Swiss, German, and French courts. It has lost in Germany; the other two cases are pending.

Fewer Needles in Chickens' Futures

Chickens soon may be able to get through their short lives with fewer vaccinations: The U.S. Department of Agriculture has just approved a twofer—a recombinant vaccine protecting poultry from two common scourges, Newcastle disease and fowlpox. The live vaccine, VectorVax FP-N, was jointly developed by Syntro of Kansas City, Kansas, and a Japanese chemical company, Nippon Zeon.

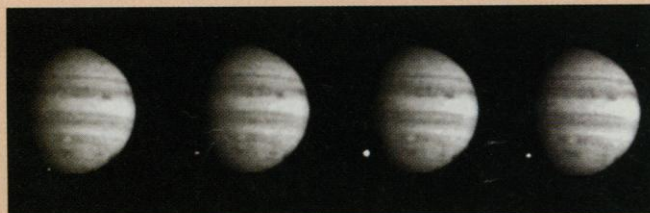
Syntro thus becomes the first company to be licensed to produce a USDA "category III" vaccine. Of the three categories for recombinant vaccines established in the mid-1980s, the first two are for inactivated vaccines and live vaccines modified by gene deletion. Category III is for live vaccines modified by foreign-gene addition; the scientists added genes from one virus into the genome of another one.

"It's definitely a milestone. The first commercialization of a category III vaccine proves that such advanced technology is viable," says Dennis Panicali, president of Therion Biologics in Cambridge, Massachusetts, which develops human vaccines.

Syntro president Donald Todd explains that "by decoding the two viral genomes, we designed and constructed a single vaccine that precisely targets both diseases." It's a two-step process. Starting with the virus for fowlpox—which reduces weight gain and egg output in poultry—scientists used gene-deletion techniques to remove its disease-causing genes while leaving intact genes that trigger a protective immune response. Then researchers added two immunity-inducing genes from the virus that causes Newcastle disease, an often-fatal respiratory and digestive illness.

Syntro expects VectorVax FP-N to quickly capture a big share of the \$9-million U.S. and \$45-million worldwide market for vaccines for these two poultry diseases. Todd says the vaccine

Direct Look at a Comet Crash



Bump in the night. A bright spot flares and dies on the dark side of Jupiter in new images from the Galileo spacecraft, offering the first direct look at the impact of a comet fragment on the giant planet. This 22 July impact of comet Shoemaker-Levy's fragment W took place out of view of Earth, like the rest that occurred over a 6-day period. (Earth-based telescopes did capture plumes that rose above the visible edge of Jupiter and dark "bruises" that rotated into view.) The bright spot in this 7-second time series, says comet specialist Paul Weissman of the Jet Propulsion Laboratory, is probably the fireball produced when the modest-sized comet chunk exploded above the cloud deck.

has several advantages over existing ones. Not only is it expected to be free of adverse side effects, but it confers immunity to both diseases for at least 6 weeks. That means huge cost savings for producers, as birds should only have to be vaccinated once, compared with up to four vaccinations over a lifetime for both diseases.

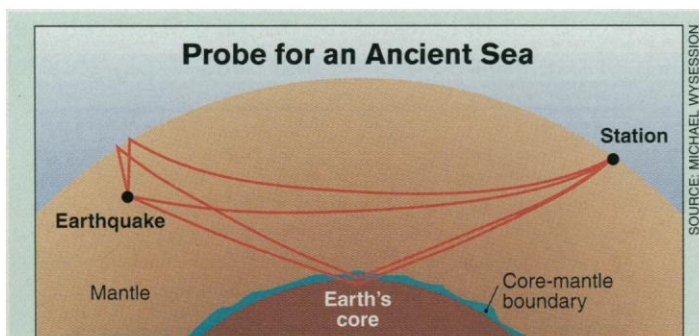
Ads for Sensation Seekers

It's commonplace to gear an ad campaign toward a particular demographic group. But researchers at the University of Kentucky have developed a series of anti-drug public service announcements that go a step further to target a particular kind of personality—the "sensation seeker." And they say the ads are working.

Communication professor Lewis Donohew, with colleague Philip Palmgreen, has found in both laboratory and field research a very strong relation between drug-taking and high scores on a scale that measures sensation-seeking. Developed by psychologist Marvin Zuckerman of the University of Delaware, the scale measures adventurousness, "disinhibition," (including tendency to violate social norms), and susceptibility to boredom.

The researchers then designed a series of anti-drug public service announcements, backed by rock music and featuring such activities as hang-gliding, that were aired on TV programs that appeal to fast-living youth. The ads included a number local viewers could call to obtain a "Thrill-seekers' Guide to the Bluegrass." Callers got paid \$15 to fill out a questionnaire testing their sensation-seeking tendencies.

Donohew and Palmgreen, whose findings will be published in a forthcoming issue of *Drugs and Society*, say that of more than 2100 callers who filled out the questionnaire, 73% fit the sensation-seeker profile. These types "remember the ads better too," says Palmgreen. Eighty percent were young; 66% male; and 32% had used illegal drugs at least



Sea soundings. Plot shows Earth's core and mantle and the paths of seismic waves from an earthquake 600 kilometers deep. Two separate paths offer two independent samples of nearly the same place in the core-mantle boundary.

Some 200 million years ago, a sea extended along the southern edge of the ancient continent of Laurasia that stretched from what is now Spain to Vietnam. The floor of the Tethys Sea, as it was called, is believed to have gradually slipped beneath Earth's surface, buried by the drift of continental plates. But no one has been able to figure out where the massive rock layer comprising the ocean floor eventually settled.

Now a Washington University geophysicist thinks he may have found it. By tracking the changes in seismic waves generated by earthquakes, he has mapped a continent-sized mass of "cool" rock—that is, perhaps 1000 degrees Celsius cooler than surrounding rock—corresponding with the presumed location of the Tethys Sea. It's buried 2000 miles deep, right at the fiery boundary that separates Earth's liquid core from its solid mantle.

Geophysicist Michael Wyssession and his colleagues used computers to generate a two-dimensional map, based on seismic waves from 750 earthquakes, of the boundary layer of mantle that underlies the Western Pacific. The relative speeds of seismic waves can be used to discern temperature differences, as they move slowly through hot forms and fast through colder ones. Focusing on a known Indonesian hot spot, Wyssession found much colder rock bordering it on three sides—suggesting the surrounding rock has not been buried long enough in the inferno-like layer of mantle to pick up the mantle's heat. Given the rock's relative youth, its immense size, and its location directly under an ancient subduction zone (where tectonic plates overlap), Wyssession, whose report appeared in the *July Journal of Geophysical Research*, theorizes that the rock may be the floor of the Tethys Sea.

Others say it's probably too early to tell. "Michael has provided some of the nicest data around, but it's inconclusive," says John Vidale, a geophysicist with the U.S. Geological Survey in Menlo Park, California. Geophysicist Don Anderson of the California Institute of Technology adds: "To really be convincing you would need to map the whole world's mantle...to prove the sea floor hasn't gone anywhere else."

once in the prior month.

So far, the researchers, who are funded by the National Institute on Drug Abuse, are pleased with their results: "We know now how to reach these people," says Palmgreen. The proof awaits the results of follow-up mail surveys to find

out whether the messages depicting alternative thrills actually reduced or discouraged drug use.

Zuckerman says that such an ad approach is unusual because "most people are not aware that drugs appeal to a certain part of the population." They "see ev-

eryone as equally vulnerable," and therefore "think in terms of peer pressure" when they're looking for deterrents. But, he continues, "just say no" is about the last piece of advice a sensation seeker is likely to follow.

Library On-Line In New York

The New York Public Library thinks nobody should be denied a drive on the information superhighway—including schoolchildren, small-business owners, and the unemployed. So the library is building a \$100-million Science, Industry and Business Library equipped with 100 computer workstations linked to dozens of databases and to the Internet. More computers will be set aside for training, and hookups for laptops and access through phone lines will allow still others to



Democratizing the infosphere. Vista of computers at new business library.

hitch a ride on the data stream.

Associate director Bill Walker says the impetus to merge the library's science and business collections came after seeing "the same people" nosing through pharmacopoeias, patent documents, and business directories. "We serve the unaffiliated—people who have no big parent corporation or academic institution," explains Walker. Billed as the nation's largest public science and business information center, the new addition, housed in part of a former department store on Fifth Avenue down the street from the main library, is due to open late next year.