of continuing the relationship. Several of the regents at the meeting were reported to have applauded statements by opponents of the university role, the first overt sign of a questioning attitude on the board to the 36-year-old relationship. Several of the regents also met on 2 March in Berkeley with the weapons labs study group. This meeting was one of two closed meetings held by the study group in California about which Schwartz complained in charging violations of FACA. No action on the issue is scheduled at the regents' mid-May meeting, which is the last of the academic year, but coalition activists are seeking to have it placed on the agenda.

UC faculty have not been notably active during this round of the debate, but an effort is reportedly being made by a group of faculty members from campuses throughout the system to put together a statement to the regents favoring severance. A noteworthy break in administration ranks did occur at the 17 February meeting when UC Santa Cruz chancellor Robert Sinsheimer asked the regents to end the universities management role because it "stands in inherent contradiction to our high and lofty principles" and "spawns cynicism and distrust in our students."

The next major move in the matter, however, must be made by DOE. The general impression up to now has been that DOE and the Defense Department were satisfied with the UC relationship and were standing pat. That may still prove to be the case. But DOE's evaluation acknowledges the debate and, thereby, widens it. And by Washington standards the issue is being taken seriously since, in bureaucratic jargon, it is being considered at the "Secretarial level."

—JOHN WALSH

Rodent Repellers Attract EPA Strictures

Repellers snare some prominent businessmen and journalists, but repulse few pests

One of the hottest items in the pest control field these days is the electromagnetic insect and rodent repeller. Literally billed as the better mousetrap, the electromagnetic repeller weaves patterns in the earth's magnetic field that are profoundly disturbing to all pests. Rats, mice, gophers, and ground squirrels within its range are simply too confused to eat, drink, or reproduce. Even the hardy cockroach is laid waste. Most pests stumble around as if in a house of mirrors, withering away. Termed "nature's equalizer" by one manufacturer, these miraculous devices vex only harmful animals and insects; earthworms, ladybugs, and game birds, for example, are unaffected. And only one small unit may be enough to cover 30 acres.

It is, in short, the answer to an exterminator's prayers, the fulfillment of the commercial businessman's needs, and the fruition of an entrepreneur's dreams.

Sound believable? It did to one of the world's largest grain dealers, the Cargill Corporation, which has more than 75 of the devices in place at its operations throughout the United States. It did to the superintendent of the U.S. Senate office buildings in Washington, D.C., who purchased six of the repellers last year. It did to the manager of the National Press Club in Washington, who also purchased several of the repellers. It also seemed believable to the Port of New Orleans, the Los Angeles Arboretum, and the Hay-Adams Hotel in Washington; each has one or more of the devices in place.

But it seemed too great to be true to officials of the federal Environmental Protection Agency (EPA). The EPA has jurisdiction over claims made by makers of pest control devices, so agency officials a year and a half ago ordered $100,000 worth of laboratory and field tests on five of the repellers. The verdict recently came in: the repellers do not work as claimed, which is to say that they do not work at all. Three have been taken off the market by EPA order, and ten other models may soon follow. Because none of the devices had any effect on insects and rodents, the EPA has concluded that the entire concept of electromagnetic repellency at low levels may safely be dismissed.

> "We're not soft-shoe boys or snake-oil salesmen," says one manufacturer. "Our product makes rats shrivel up and just bump into each other."

In light of the nigh-impossible claims made about the devices, as well as the paucity of objective data supplied by the manufacturers, this action is hardly surprising. What is surprising is that this particular birdlime caught so many people—that otherwise shrewd businessmen have been convinced the repellers actually operate as promised. Some remain convinced even in the wake of EPA's action. Cargill remains effusive about its repellers, for example. A corporate spokesman says that "although we don't want to get in a spitting contest with EPA, we find our repellers to be a valuable tool in minimizing pest problems." In locations where the units have not performed as expected, the spokesman says, the manufacturer cheerfully provided replacements. Similarly, the superintendent of Descanso Gardens in Los Angeles (part of the Arboretum) reports that since he purchased one such device, known as the Nature Shield, 2 years ago, "I haven't seen any ground squirrels in the area that the repeller is patrolling, er, radiating." The only time squirrels appear, he says, is when the repeller unit needs new batteries.

The repeller unit at the Hay-Adams Hotel remains in place, in a compartment just off the Preamble dining

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room, where Washington's high and mighty frequently lunch. At the Senate, the repellers were taken out of use after EPA's action, but a spokesman for the Capitol Architect says the repellers had prompted a "significant reduction in complaints about rodents from Senators' offices." The idea for purchasing them, he says, was forwarded by Senator William Proxmire (D-Wis.), prominent for his monthly Golden Fleece awards.

Several prominent journalists have also been convinced that the devices are effective. Frank Aukofer, the hard-headed Washington bureau chief of the Milwaukee *Journal* and immediate past president of the National Press Club, reports that the Nature Shield unit used in the press club building "seems to have had some effect for a short time." Aukofer says he was skeptical of the idea, but that it was urged on him by the press club's manager, Ray Davis, as the answer to the club's mice and roach problems. Davis now works full-time as the Washington representative of the company that makes the Nature Shield, Solara Products of Costa Mesa, California. Pat Furgurson, chief of the Baltimore *Sun*'s bureau in the press club building, also reports that "the cockroaches seem to have gone away" since the Nature Shield was placed in the press club bar one flight above his office.

This is high praise for a supposedly scientific product that had a decidedly unscientific start. The concept is said to have originated in 1972 with Robert Brown, an electric guitar manufacturer who one day accidentally miswired a guitar and left it plugged in overnight. The next day, he discovered several dead rodents in his workshop. Soon, he was in business.

George Fiedler, the 60-year-old president of Solara Products and one of the key figures behind the concept, explains that he helped build Brown's first device—the EPA took it off the market last year—but that he and Brown had some disagreements that prompted them to split up. Many of the early units—which Fiedler characterizes as "oversize doorbells"—were supposedly defective, and some would blow up.

Fiedler explains that his current product, the Nature Shield, "is the result of an idea utterly different from Brown's," so different in fact that "the EPA is trying to comment on a magnetism they don't understand." The principle behind it, he says, is known as "contro-clusive magnetism," a term that Fiedler proudly says he coined himself. Contro-clusive magnetism, or CCM, is, according to a brochure, "A multiple vortex energy flow resolving in an elastic expansion and capacitance in relation to space and attitude." Or something like that.

Raymond Beal, with the U.S. Forest Service in Mississippi, placed this operating Nature Shield in a termite infested area last fall; 3 months later, the termites had constructed their tubing directly on top of it. Photo shows a close-up of the machine, with a light-emitting diode in the center. CCM is an abbreviation of "contro-clusive magnetism."

EPA officials take the unsentimental approach that no matter what it's called, it doesn't work. In tests conducted at EPA laboratories in Beltsville, Maryland, at the University of California campuses in Davis and Riverside, and at the U.S. Forest Service station in Gulfport, Mississippi, researchers found again and again that the repellers had no effect, whether on caged animals and bottled insects, or in deliberately infested and carefully monitored fields. In each case, the repellers were tested for periods beyond those claimed by the manufacturers as necessary to obtain results, and the outcome was measured by comparison with a control group. In one instance, termites constructed a network of tubing directly on top of an operating repeller.

Some creatures are indeed sensitive to magnetic fields—a fact that appears to have been embroidered upon by the manufacturers of the electromagnetic repellers. Migratory birds, bees, and some fish use the earth's magnetic field to navigate, and theoretically, major disruptions could be confusing. In tests conducted by the National Bureau of Standards, however, the repellers were found to generate a field far too weak to have this effect—a field roughly comparable to that generated by a soldering gun, a hair dryer, or an electric blender. At a distance of 10 feet, the field's strength was less than that normally present in nature.

No measurable electromagnetic field at all was detected emanating from three of the repellers, including the Nature Shield. Surprisingly, Fiedler does not dispute this finding. "EPA didn't measure anything coming out, because we're not trying to radiate something," he says. "The Nature Shield takes the electromagnetic field that already exists and simply puts a pattern in it. We're dealing with nuances of power that slightly change the environment." But couldn't the effects be measured by any device? "I'm sure they can, and we're working on that. You cannot just go down to the store and buy such a device because it has not been needed before," he seriously insists.

The Stanford Research Institute, which analyzed the Nature Shield for one of Fiedler's associates, confirmed that it does not generate anything detectable, in part because the device's exterior is made of aluminum. "If the device does work as advertised, it evidently makes use of some physical principle unknown to us," the institute cautiously observed. What few electronic components the Nature Shield has can be duplicated with parts costing $20, institute added. The current list price for the Nature Shield, however, is $1195.

Fiedler protests that it is actually

many times more expensive than the Stanford estimate to manufacture. How many times? "That's proprietary information." He also says that he has "hundreds of satisfied customers all over the world." Sales have been made through foreign agents to buyers in Panama, Chile, France, Spain, Mexico, and the Philippines, Fiedler says. Asked for examples within the United States, he cited the Los Angeles Rat Control Program, where four units "were objectively tested and found effective." Indeed, a letter from the program administrator says just that.

Reached by phone, however, the administrator, Edward S. Sharpe, tells the story a little differently: "We sent those blasted things back to him because they're not worth the blasted metal they're made of." The letter of recommendation was written from information supplied him by an assistant, Sharpe says. The assistant, both he and Fiedler agree, is now a full-time Fiedler employee. "I've had calls from Italy and Japan about that letter," Sharpe says. "It's haunted me ever since it went out."

> "... elastic expansion and capacitance in relation to space ..."

Another reference supplied by Fiedler was also a bit more underwhelmed than he first seemed. According to a letter written in February 1978 by Andreas Reising of Reising's Sunrise Bakery in New Orleans, installation of a Nature Shield almost completely eliminated their rodent problem. Now, Reising says, "I'm not as much on cloud nine as when I wrote that letter. I've had to resort to chemicals and baiting in addition to the Shield." Similar tales are told by two other references, the Port of New Orleans and the Norfolk Shipbuilding and Drydock Corporation.

"In order to understand this thing," says Rex Marsh, a University of California scientist who tested the Nature Shield for EPA, "you have to realize that people are so desperate to solve their pest problems that they are gullible enough to believe in almost any product." The real explanation, however, may lie in a statement by Reising. Asked why he purchased the device and kept it on hand despite some dissatisfaction, Reising paused and then replied, "I just wouldn't want to be without it."

—R. JEFFREY SMITH

U.S. Scientists Say World Dominance Is Over

A loud but somewhat confusing appeal for more basic research support has been issued by Derek Bok and David Saxon, presidents of Harvard and the University of California, respectively, and three biomedical researchers. The quintet, speaking for 21 organizations, asked Congress to "support the principles of stable, balanced and controlled investment in basic research" as reflected in the President's fiscal year 1980 budget, except—the clarion call continued—for the NIH budget to which some $200 million should be added.

"It is clear that we have been remiss in trying to explain how basic research is important to the country," Bok announced at a press conference held in Washington, D.C., on 17 April. Bok revealed in challenging the figure supplied by a questioner, however, that he himself did not know how much money the federal government spends in support of basic research. Asked how much money he thought the government should be spending, Bok was obliged to say that "That is a question for which there is no clear answer. No one can say how much basic research is the right figure." The Administration and Congress, however, have to decide just that.

Saxon observed that "We had a great flowering of science and technology in this country following the Second World War, and we are now facing a change. It fills me with foreboding. There are clear indicators that some things have gone wrong. In automobiles, steel, electronics, we are losing our leadership." But Saxon offered no specific remedy other than asking that Congress approve the President's budget.

A similar lament of national decline was offered by James Watson of Cold Spring Harbor: "For better or worse, our scientific dominance in the world is declining. Western Europe is ahead in areas such as high-energy physics." But biologist Watson did suggest a remedy: "There is a demoralization in the academic scientific community. Their salaries are lousy. If you are a policeman you get paid more than our younger scientists."

Mahlon Hoagland, of the Worcester Foundation for Experimental Biology, said that the proposed NIH budget would result in a 50 percent cut in the number of new basic research awards: "The effect of this cut would be disastrous—it will require dismantling our labs and turning away young people."

The Administration's argument for giving NIH a more or less stationary budget amid a generally upward budget for basic research is that NIH has fared well in the past and its turn has come for a smaller share of the increases.

Kennedy Leaves FDA for Stanford

Donald Kennedy is returning to Stanford University after 2 years as commissioner of the Food and Drug Administration. He had intended to stay longer, but the position as provost and vice president for academic affairs at Stanford would not wait.

"It goes without saying, I hope," Kennedy wrote in a 12 April letter of resignation to his boss, HEW secretary Joseph Califano, "that the timing is not what I would have wished; and as you well know, the decision was determined by circumstances there and not here."

Califano in reply praised Kennedy as a "superb public servant," and called his tenure of the FDA "a remarkable demonstration of the effect that an individual with great talent and commitment can have on an organization."

Kennedy had been at Stanford for 20 years and was head of its human biology program before joining the FDA in March 1977. Stanford has accumulated a variety of headaches (*Science*, 12 January 1979) and it was felt that Kennedy, as deputy to president Richard Lyman, was the man to address them.

Kennedy says the things he feels most positive about having done at the FDA include opening up the agency, encouraging consumer involvement in the regulatory process, and healing some old wounds left by a legacy of personnel disputes. His major disappointment has been the failure so far to get drug reform legislation through the Congress.

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