

year to make OrthopterNets operational. Part of the challenge is making the equipment as small, light, and powerful as possible. On the one hand, the death's head cockroach is a hearty creature. During the May field experiment, roaches were carrying two grams of equipment—about half their total weight. And, Epstein noted, “They don’t seem to mind.”

Nonetheless, about four minutes into the field experiment, at least one of the roaches slowed considerably, as first the battery, and then the circuit board, slipped from its back. “Batteries are the biggest limitation,” says Epstein, who says that’s why the team is focused on developing the circuit board to consume less power.

The OrthopterNets project is one of many that the Defense Department has sponsored that harness “cyborgs”—short for cybernetic organisms—for military purposes. Several years ago, the department’s Defense Advanced Research Projects Agency, or DARPA, funded a program called HI-MEMS, or Hybrid Insect Micro Electromechanical Systems, to develop technology to control insect locomotion. Epstein attended a HI-MEMS briefing. “I was very impressed with the work that I saw,” he recalls. Noting that HI-MEMS focused on insect movement, “I thought why not do something involving communication with insects?”

He constructed a team of experts on everything from insects to integrated circuits. His partners—Hong Liang of Texas A&M’s mechanical engineering department along with Byunghoo Jung and Harry Diamond of Purdue University’s School of Electrical and Computer Engineering—describe Epstein as “highly creative.” “I’ve always enjoyed our collaborations with Ben,” adds Diamond, who worked with Epstein on the development of a digital array radar for the U.S. Army.

A tinkerer by nature, Epstein says his childhood bedroom in Cherry Hill, N.J., was littered with deconstructed gadgets. At Rochester, he had less time for informal experimentation. “To be quite honest,” he confesses, “I was just studying so much.”

There were exceptions. Just for fun, he helped a professor test the theory that flatworms, or planarians, emitted electrical fields. If the fields could be manipulated, Epstein says, “you could make planarians grow two heads.”

Alas. “We never got that far,” he concedes. **R**

In the News



GAME CHANGER: Ayub founded the Afghan Youth Sports Exchange.

ALUMNA ONE OF 33 WOMEN FEATURED IN ESPN MAGAZINE’S ‘BEYOND IX’

ESPN Magazine named **Awista Ayub** ’01 one of “33 women who will change the way sports are played” in an article, “Beyond IX,” in its June 11, 2012, issue commemorating the 40th anniversary of the passage of Title IX. A section of a larger education bill, Title IX prohibited discrimination in any federally subsidized educational program on the basis of sex, and led to major improvements in athletic programs for women and girls. In 2003, Ayub founded the Afghan Youth Sports Exchange to use athletic competition to teach leadership and conflict resolution. The exchange brought Afghan girls to the United States to play soccer and to return to Afghanistan as ambassadors for the sport. The program eventually resulted in a league of 15 girls soccer teams in Afghanistan (See “Supporting a ‘Home’ Team,” *Rochester Review*, November–December 2009). Ayub is now helping to bring basketball and tennis, as well as soccer, to war-torn regions as director of South Asia programs for the nonprofit Seeds of Peace.

VITTORIO GRILLI ’86 (PHD) NAMED ITALY’S MINISTER OF FINANCE

In July, Italian Prime Minister Mario Monti appointed **Vittorio Grilli** ’86 (PhD) as minister of finance. A native of Milan, Grilli had previously served as deputy minister of Italy’s Ministry of Economy and Finance, and before that, in Italy’s treasury. Grilli also worked in the private sector as managing director of the London office of Credit Suisse First Boston. After earning his doctorate in economics at Rochester, Grilli taught economics at Yale and at the University of London.



GRILLI: New Italian finance minister

GRADS NOMINATED BY PRESIDENT OBAMA TO KEY POSTS

President Barack Obama has nominated **Allison Macfarlane** ’87 and **Emil Kang** ’90 to key administration posts. Macfarlane, a geologist, was tapped to chair the Nuclear Regulatory Commission. A professor of environmental science and policy at George Mason University, she served previously on Obama’s White House Blue Ribbon Commission on America’s Nuclear Future, which studied nuclear waste disposal. Kang, a musician and the director for the arts at the University of North Carolina at Chapel Hill, was nominated to be a member of the National Council on the Arts. The council advises the chair of the National Endowment for the Arts on issues concerning grants, funding guidelines, and new initiatives.