NEW ZEALAND

Fund Fuels a Resurgence of Basic Research

WELLINGTON, NEW ZEALAND—Paleontologist Alan G. Beu thought his basic research career had come to an abrupt end. In 1992 the New Zealand government, in an attempt to increase the payoff from publicly funded research, shifted funds from basic science to more applied studies and shut down Beu's employer, the New Zealand Geologic Survey—"one of the freest, most open research institutes in the world," says Beu. Instead of studying evolutionary trends among fossil mollusks, Beu, who was transferred to a new Institute of Geological and Nuclear Sciences, was asked to look for evidence in the country's geological past that would help identify potential oil and gas deposits.

But now Beu is back to analyzing evolutionary trends. The New Zealand government has begun to swing the pendulum back a little toward basic research. In September, Beu and 59 other New Zealand researchers received grants from a new basic research program called the Marsden Fund, named for the late Sir Ernest Marsden, a physicist who help set up the country's research programs. The fund is expected to quadruple in size by 1997, to $15 million, and then grow in step with increased government spending on applied research.

"It seemed that [basic] science was on its way out," says Richard I. Walcott, a geologist at Victoria University in Wellington. "This was the first recognition that science is more than just a money-earner." A major force in creating the fund was the country's science minister, Simon Upton, who argued that basic research contributes to the long-term health of the country's booming economy. The fund is also part of a government promise to raise public support for science to 0.8% of the country's gross domestic product, up from 0.6% in recent years.

For basic researchers like Beu, the Marsden Fund is a welcome correction to a reorganization in the early 1990s that put applied research into the driver's seat and attempts to measure the impact of funded projects. A central element of the realignment was the creation of the Public Good Science Fund (PGSF), a $175 million grants program that concentrates on work with a short-term payoff for industry. Animal industries, dairy industries, forage plants, crops, forestry, and fisheries top the list of 17 socioeconomic priorities, with ecosystem and Antarctic research at the bottom. Indeed, the government even demanded that universities surrender the $7 million a year they had been spending on research in return for the chance to apply to the larger PGSF pot.

The first version of the PGSF included fundamental research, but placed it far down the list of priorities. A second ordering put even greater stock in science as an economic investment, raising concern that basic research might get squeezed out entirely. At the same time, researchers complained that the new emphasis on relevance and accountability could have an effect on the quality of the work. Academic scientists were already feeling the pinch from their own institutions, which had cut back on their support for in-house research to meet a rapid growth in undergraduate enrollment. "There was no money at all," says physicist Dan F. Walls of the University of Auckland. "It was really bad news."

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Timely grant. The Marsden Fund gives Beu a chance to ponder the evolutionary implications of fossil mollusks.

But once the PGSF was in place, says Laurie S. Hammond, chief executive officer of New Zealand's Foundation for Research, Science, and Technology in Wellington, which administers the PGSF monies, policy-makers became more comfortable with the idea of supporting curiosity-driven research as part of the overall R&D portfolio. "Science isn't an afterthought; it's part of the strategic thinking of the government," says Hammond. The fund allows New Zealanders "to stay connected to international developments," he argues, "and it maintains the diversity of science in the New Zealand system."

The first round of awardees reflect that diversity: 10 grants were made in the mathematical and information sciences, 28 in agricultural, medical, and life sciences; six in earth sciences and astronomy; and eight each for the physical sciences and engineering and for the social sciences. Academic scientists led the pack, receiving 60% of the initial $4 million awarded. One 3-year grant, for example, allows University of Auckland researchers to interview retired school teachers and adult students to learn the influence of the native school system on the indigenous Maori tribes, while Charles Daugherty and a postdoctoral researcher at Victoria University will use molecular techniques to understand speciation in New Zealand geckos with an eye toward revising current theories of reptile taxonomy and vertebrate evolution in the country. "The DNA work would not be done without the Marsden grant," Daugherty says.

The grants also give a boost to international collaborations—especially important for a small country far removed from the traditional transatlantic and transpacific scientific axes. Walls, who is working on theoretical models for Bose-Einstein condensation and assessing the feasibility of making an atom laser, has toured U.S. labs and hopes to bring senior scientists to New Zealand to work with his quantum optics group at the University of Auckland. Without the Marsden money, he says, "we'd be doing things at a lot smaller level" and have little direct contact with physicists outside New Zealand. One of Walls's colleagues, Philip Yock, is using his grant to cement an 8-year-old collaboration with Japanese astronomers. Mounting a Japanese camera on a New Zealand telescope, he will join three other international teams in a search for observational evidence of dark matter. "We now have 24-hour coverage all around the globe, in any direction in the sky," says Yock.

For every grant winner, however, there were 20 losers. More than a thousand applicants submitted preliminary proposals, and "at least half looked as if they were fundable," says Walcott, a member of the Marsden selection committee. Some of those losers worry that only well-known scientists will be able to get Marsden grants, and biomedical researchers complain that the fund does little to ease the stiff competition in their field. There's also a fear that an economic downturn might jeopardize plans to enlarge the fund.

But for now, both winners and losers say the Marsden Fund has boosted their confidence in the future of New Zealand basic science. "It's a wonderful opportunity to do blue-sky research," says Beu, pleased to once again have time to think about the evolutionary rather than the economic implications of his fossils.

–Elizabeth Pennisi

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