searchers have also come across traces of microbial life in highly acidic settings. But Edwards and Banfield are the first to collect and quantify these Archaea from a natural environment. They have since found the same or similar species at other sites throughout the mine.

If these microbes are widespread in the natural world, as these findings suggest, how they got there "is the $64 million question," says Banfield. Given their need for such acidic habitats, it's unclear how they could spread. Princeton University geochemist Tullis Onstott wonders whether such microbes found in Earth's subsurface became established when these geological formations first formed and then existed in a dormant state through geological time until conditions became suitable for them to spring back to life. Whatever the answer, the discovery of this archaeal species suggests that yet more bizarre microbes may exist out there, perhaps bugs that survive at negative pHs. Predicts Onstott, "If you keep looking, you will find them." **–ELIZABETH PENNISI**

CANADA

Strong Economy Lifts Some Research Boats

OTTAWA—Flush with revenues from an unprecedented economic boom, the Canadian government last week unveiled a series of budget initiatives that would reinvigorate academe while making major thrusts in high-energy physics, genomics, and environmental technologies. But there's no increase for the country's research councils, and that could mean continued hard times for many scientists.

The first wave of good tidings came on 28 February with news of an additional $615 million in the 2000–01 budget for refitting university labs and $109 million for a national genomics initiative (*Science*, 3 March, p. 1569). The next day the federal government nudged the high-energy physics community into the winners' circle by announcing plans to spend roughly $136 million over 5 years on operations and upgrades at the national laboratory for particle and nuclear physics.

"It's a huge vote of confidence in basic research in Canada," says Alan Astbury, director of the Tri-University Meson Facility (TRIUMF) in Vancouver, built in 1974 to develop a Canadian research capacity in particle physics. "This will allow us to do what you might call real nuclear physics." TRIUMF plans to use roughly $15 million of its windfall for a fourfold boost in the energy level of its nearly constructed Isotope Separator and Accelerator (ISAC), to 6.5 million electron volts. ISAC takes low-mass particles, evaporates the nuclei, ionizes them, and then accelerates them to higher energies. The upgrade will allow scientists to work at an energy level "which at the moment doesn't exist in North America," Astbury says, explaining that accelerators like the Relativistic Heavy Ion Collider at Brookhaven National Laboratory in Upton, New York, operate at much higher energy levels and generate "very short-lived" nuclei. Another $10 million will go toward components for the Large Hadron Collider being built by CERN, the European particle physics center near Geneva, bolstering Canada's contribution to international physics.

Stronger global ties are also expected from a national genomics initiative, first proposed in 1998 (*Science*, 3 July 1998, p. 20). Martin Godbout, acting president of the nonprofit corporation overseeing implementation of the initiative, says it will allow Canada to participate in a number of international consortia. The G-5 of genomics nations (the United States, United Kingdom, Germany, France, and Japan) "has become the G-6," he noted with pride.

Provincial governments are expected to at least match the federal contribution to Genome Canada, creating a genomics center in each of five specified regions. Each center will receive up to $15 million a year to pursue work of interest to industries such as agriculture, health, forestry, or fisheries. "They'll have to include proteomics and sequencing and genotyping, so the technology platform will be a prerequisite for each center. But the centers will be allocated by sector," Godbout says.

The $615 million for refurbishing university labs, which will be channeled through the Canada Foundation for Innovation (CFI), is seen as dovetailing with an earlier commitment to create 2000 new research chairs (*Science*, 22 October 1999, p. 651). The 3-year-old CFI program, which would have run through its initial $680 million next year, is intended to rejuvenate university research facilities, including networking and databases. With the CFI awash in applications, president David Strangway said the new monies will allow the foundation to clear its backlog, undertake more "strategic" competitions aimed at bolstering specific scientific sectors, and possibly create a $70 million pot for international joint ventures in such areas as information technology or biotechnology.

Although the government invested heavily in university infrastructure and personnel, the nation's three research granting councils received no increase in their support for basic research grants, despite skyrocketing demand prompted, in part, by the new infrastructure programs. "It's an appalling budget," complained Jim Turk, executive director of the Canadian Association of University Teachers. "The universities will be worse off."

Similarly, the National Research Council (NRC) was stiffed for the second straight budget despite Industry Minister John Manley's earlier vow to make it a top priority and an aggressive lobbying effort by NRC officials (*Science*, 18 September 1998, p. 1781). NRC president Arthur Carty says he's "devastated" and must now consider a range of cuts. His options include across-the-board reductions, closure of one of its institutes, or ending the agency's contribution to such national projects as one to develop fuel cells and another to build a synchrotron light source. "It's pretty morale-sagging," Carty noted.

–WAYNE KONDRO

Wayne Kondro writes from Ottawa.

BIG SCIENCE

Top French Researchers Spar Over Synchrotron

PARIS—A lively and often heated debate broke out last week among some of France's top scientists over plans to scuttle a major French synchrotron radiation facility and instead back a joint venture across the English Channel. But for all their oratorical fireworks, the scientists, who spoke at a parliamentary hearing, were essentially haggling over a possible consolation prize: whether France should build a second, smaller synchrotron facility on its own soil.

Scientists use x-rays produced by synchrotrons to probe the atomic structure of proteins and other compounds. French researchers had been counting on getting an advanced x-ray source, the long-planned SOLEIL facility, until research minister Claude Allègre canceled the project last year. Instead, Allègre opted for French partnership in a new synchrotron to be built with the British government and the Wellcome Trust, the mammoth British medical charity (*Science*, 6 August 1999, p. 819). Allègre's de-

Synchrotron skeptic. Nobel laureate de Gennes questioned importance of x-ray sources. CREDIT: ESPCI