Southern lodestar. Australian scientists will no longer have to beg for beam time in far-flung lands.

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BIG FACILITIES

Researchers Get in Synch Down Under

MELBOURNE, AUSTRALIA—When his protein crystals melted en route to Japan last June, Jose Varghese bemoaned the loss of "months of work." Varghese, a protein crystallographer who directs the structural biology program at CSIRO, Australia's national science agency, had planned to use Japan's Photon Factory to study the structure of human β amyloid, a protein implicated in Alzheimer's disease. Now he no longer has to worry about project-wrecking long-distance journeys: Starting this summer, he will be able to carry out the same studies without leaving the continent.

Last week, the state of Victoria unveiled the $170 million Australian Synchrotron—the nation's first. "We've always been the poor neighbor who can't come to the party," says Dean Morris, a physicist who has directed the machine's construction and fine-tuning. But with a synchrotron of their own—and the only one on this side of the Southern Hemisphere—set to come online in July, Morris says, "Australia will be a destination for researchers from around the world."

Australia is pinning much of its hopes for blossoming into a science powerhouse on what is essentially a gigantic doughnut-shaped microscope. By accelerating electrons to nearly the speed of light and bending their path within a 200-meter-long magnetic racetrack, the synchrotron produces pencil-width beams of photons a million times more intense than sunlight. The Australian Synchrotron will not be the most powerful in the world; that title belongs to the SPring-8 synchrotron in Hyogo, Japan. But its design allows for a wide range of applications, from nanotechnology and cell biology to forensic sciences. Because of this versatility, the synchrotron "has attracted more support across the whole spectrum of national science than any other project in Australia's research history," says John Brumby, Australia's minister for innovation.

At full capacity, the synchrotron is expected to host as many as 1200 scientists a year, up to a third of whom will be from abroad. (Four of 13 planned beamlines will be available by summer.) The dream, Morris says, "is to put Australia on the scientific map for big international collaborations." He says that many here were chagrined that Australia was not invited to join the ITER fusion reactor now being built in Cadarache, France. "We have the expertise to take part in these sorts of projects, but without any world-class research facilities of our own, we're not considered as being in the same league." The new synchrotron is half of the solution, Morris says. The other half is a new research reactor near Sydney—an upgrade of an older facility—that provides neutron beams for materials science experiments.

Earning respect isn't the only aim. The synchrotron should also boost homegrown products: Casting the high beams on wool, for instance, will reveal the fine structure of fibers and enable scientists to tinker with textile properties. And the country's mining establishment will benefit from a future beamline dedicated to minerals research. The facility "will transform the technical nature of many Australian industries," predicts synchrotron director Robert Lamb.

Lamb and others hope the new machine will help squelch one export: scientific talent. By opening major science facilities, Australian universities hope to entice top expatriate scientists to come back home. "These tools … will enable Australia to compete effectively with researchers in the strongest Northern Hemisphere countries," says Robert Robinson, head of the Bragg Institute in Sydney. The Australian Synchrotron puts out its first call for project proposals next month.

–JOHN BOHANNON

SCIENCESCOPE

Things Looking Up

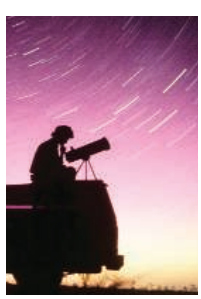
To keep up with other spacefaring nations, the United Kingdom needs its own space agency, the Royal Society said this week in a submission to a government consultation aiming to draw up a space strategy for the years 2007–10. With government spending spread across nine departments and funding agencies, Britain's space effort lacks focus, the society says, making it particularly hard for the U.K. to speak with one voice when negotiating bilateral projects apart from the multinational programs of the European Space Agency.

A new national agency would replace the British National Space Centre, which now plays a coordinating role but has a staff of just 45 and no budget of its own. The U.K. spent just over $400 million on space research and missions in the 2005–06 fiscal year and provides only 7% of the budget of the European Space Agency; France and Germany give 25% and 20%, respectively. "It can be difficult at times to get agreements for international missions," says space scientist Andrew Coates of University College London. "A more effective voice would be extremely welcome." But it's not all about perception. "We should be fighting for more money for space," Coates says. "Our ambitions go far beyond what we can currently do."

–DANIEL CLERY

Lights Out, Please

Astronomers upped the ante in their efforts to fight light pollution with an international conference last week that drew up a declaration on a "right to observe the stars" and promoted the idea of specially protected dark-sky reserves. "There is lots of protection for different environments. Now there is a movement to look at the night sky in the same way," says Graham Bryant of the British Astronomical Association.



A UNESCO-sponsored meeting, Starlight 2007 brought astronomers together with tourism, environment, and culture experts on the Spanish island of La Palma, whose dark night skies have been protected by law since 1988. "By mixing up the various communities, everyone wins," says David Crawford, head of the International Dark-Sky Association. Cipriano Marin of UNESCO suggests that tourism authorities in astronomy hot spots such as La Palma and Hawaii could develop trip packages that exploit each locale as a "clean-sky destination."

–DANIEL CLERY

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