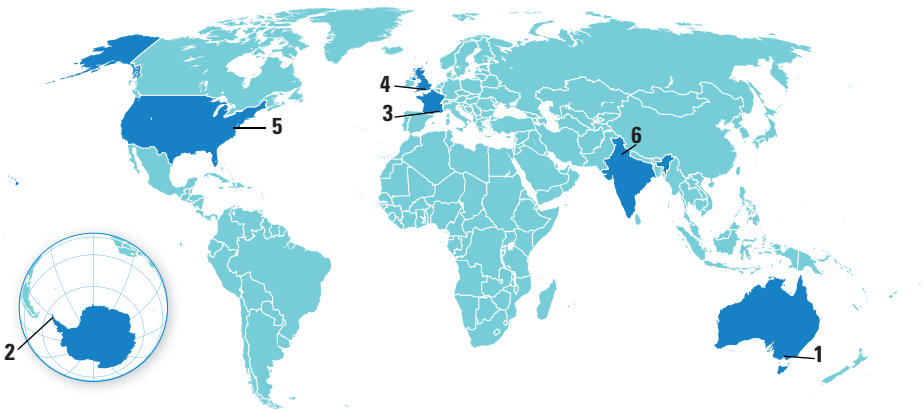
AROUND THE WORLD



Melbourne, Australia **1**

Salvation in Sight for Synchrotron

After months of uncertainty, a deal is taking shape to save the Australian Synchrotron, one of two such facilities in the Southern Hemisphere. The synchotron has given Australian scientists access to powerful beams of light to probe new materials, proteins, and other substances. But last May, the synchrotron's major backers—the federal government and the government of Victoria State, which hosts the facility—omitted funds for the synchrotron in their budgets beyond 30 June 2012.


The Australian Synchotron

Under a new agreement about to be inked, federal support for the synchrotron will be extended through the Australian Research Council's Special Research Initiative, which awards large grants to university consortia. Monash University will lead the bid for the funds, says Ian Smith, the university's pro vice-chancellor for research and research infrastructure. Smith says that the synchrotron will need at least AUS $100 million to operate over the next 4 years. The Special Research Initiative would provide a quarter of the funds; universities would match that amount, and the remainder would come from the Victorian government, the New Zealand government, and three Australian government agencies.

Admiralty Bay, Antarctica **2**

Fire at Brazil's Antarctic Station

A fire sweeping through a generator room at Brazil's Comandante Ferraz Antarctic Station caused an explosion that killed two people, injured another, and destroyed about 70% of the station on 25 February. The Brazilian Air Force has evacuated 45 people from the base, including the injured man.

The station is in the South Shetland Islands near the tip of the Antarctic Peninsula, where scientists studied coastal and shelf marine ecosystems and the impact of climate change. "The assessment is that we really lost virtually everything," Brazilian Defense Minister Celso Amorim told reporters on 25 February, noting that the loss of the base—Brazil's only permanent research station on the continent—is a major blow to Brazil's scientific community. Amorim added that plans for reconstructing the base would begin almost immediately.

Cadarache, France **3**

ITER Dodges Trouble With Superconducting Cables

A potential problem that threatened to delay construction of the huge ITER fusion reactor looks like it has been resolved. Tests last year on samples of superconductor cable for the facility's magnets indicated the cable would last only one-tenth as long as required. That prompted a scramble to identify the cause and come up with a solution. Recent tests at a high-magnetic-field facility in Switzerland show that engineers have succeeded.


Wrapped up. Superconductor for ITER's magnets.

The superconducting cables consist of multiple "triplets" of three strands. The cables that failed contained triplets made up of two niobium-tin strands and one of copper; the copper is a safeguard against "quenching," when the niobium-tin material suddenly loses its superconducting ability. In normal operation, the two strands shoulder the large magnetic forces that the conductors experience. The new configuration would consist of three strands made of a combination of copper and niobium-tin, so that all three share the load of magnetic forces.

This has delayed the start of conductor manufacture, but other delays—including last year's earthquake and tsunami in Japan—had already forced ITER managers to push back the scheduled start of the reactor by 1 year to late 2020. **http://scim.ag/_ITER**

Southampton, U.K. **4**

Declassified Sub Data To Shed Light on Arctic

The U.K. Minister of Defense is declassifying data collected by Royal Navy submarines in the Arctic and handing them over to scientists to help track the region's changing climate. The subs' data will include temperature and salinity measurements that may span time periods of anywhere from 10 to 20 years. Scientists are eager for information about how the Arctic has been changing over the past few decades, but the harsh conditions make it hard to collect traditional oceanographic measurements in the region, says John Allen, an oceanographer at the National Oceanography Centre, Southampton, which will receive the data.

Because of the classified nature of the data, it's not yet clear how much there is, Allen says, or even exactly what will be made available. Before the scientists can begin to analyze the data, the ministry's Defense Science and Technology Laboratory

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will first remove the exact locations where the data were collected. But, even without precise locations, the data can provide a valuable, long-term series of snapshots of the changing chemistry of Arctic waters. In particular, Allen says, they will help scientists compare the time scales of temperature changes in ice-covered waters with those in ice-free waters.

Washington, D.C. **5**

World Bank, NGOs Partner For Ocean Health

The World Bank is teaming up with major environmental groups and international non-governmental organizations to raise $1.5 billion to improve ocean health. The Global Partnership for Oceans, announced 24 February, will attempt to speed progress on overfishing, marine pollution, and destruction of ocean habitats such as coral reefs.

Top goals for the next decade include rebuilding more than half of the depleted fish stocks around the world and expanding marine protected areas from about 1% of the oceans to cover 5%. In addition, aquaculture should provide two-thirds of the global fish supply rather than half, and it should be made more sustainable by relying less on fish meal for feed, for example. "All these points are well thought out," says ecologist Carl Safina of Blue Ocean Institute in Cold Spring Harbor, New York, who says he welcomes the announcement. "The biggest criticism of the World Bank is that it increases ability of people to exploit nature and does not emphasize the need for sustainability, but this does."

Last gasp. Many stocks of Patagonian toothfish, also called Chilean sea bass, are depleted.

To help accomplish these goals, the partnership says it will raise $300 million for initial actions, such as ramping up efforts to fight government corruption. These efforts, they hope, will leverage another $1.2 billion from donors over 5 years. Details of the partnership will be worked out at a meeting next month.

New Delhi **6**

Space Scientists Protest Colleagues' Blacklisting

India's scientific community is turning up the heat on the government over its controversial sanctions of four former officials of the Indian Space Research Organisation (ISRO) for alleged missteps in a satellite deal. Last month the goverwnment banned four scientists—including former ISRO head G. Madhavan Nair, who oversaw India's successful Chandrayaan-1 lunar probe in 2008—from holding a government position for the rest of their lives. The punishment cited "procedural lapses" during negotiations to lease two communication satellites to a private company.

Senior Indian scientists have blasted the ban. Roddam Narasimha, an aerospace scientist at Jawaharlal Nehru Centre for Advanced Scientific Research in Bangalore, resigned on 24 February from the Space Commission, India's top space policy body. Narasimha wrote in a letter to Prime Minister Manmohan Singh that the "actions taken against the scientists could demoralize the Indian Space Research Organization's scientific community, and adversely affect its ability to take the kind of technological initiatives … that are the hallmark of an innovative organization."

http://scim.ag/Indiaspace

THEY SAID IT

"I suspect … that both Einstein's theory and my boxer shorts are safe."

—Physicist Jim Al-Khalili of the University of Surrey in the United Kingdom, who had promised to eat his boxers on live TV if neutrinos were shown to travel faster than light (see p. 1027).

CREDITS (TOP TO BOTTOM): PZUMA PRESS/NEWSCOM; M. VAN LUNENBURG/OWL MONKEY PROJECT

Double-Duty Dads

In the primate world, owl monkeys are unusual because the dads play a big role in bringing up baby. Now, the unprecedented births of two sets of twins in a population of owl monkeys that researchers have been studying for 15 years in Argentina is offering a "rare, exciting, and fascinating" research opportunity, says behavioral primatologist Eduardo Fernandez-Duque of the University of Pennsylvania.

"Few aspects of primate behavior are so intriguing, yet so poorly understood, as the intense care of infants by males," he explains. And owl monkey fathers (like the one pictured at left) are especially unusual, in that they "do it all—carrying the infants, feeding them, playing with them." Now, a recent grant from the U.S. National Science Foundation will enable Fernandez-Duque and colleagues to see how the dads handle double duty as the twins, born late last year, grow up. The study may offer insight into why this rare child-rearing arrangement evolved.

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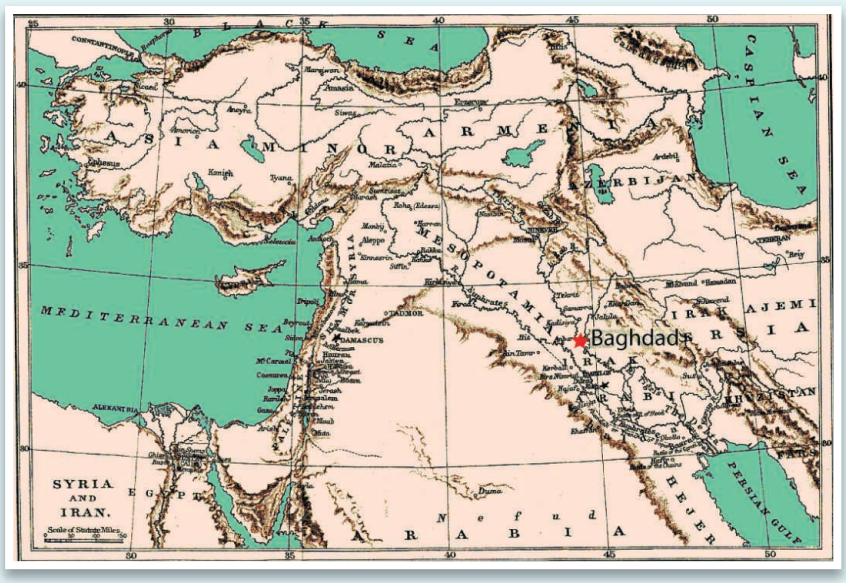
Random Sample

A Cold July in Baghdad

Researchers in Spain are tapping a new database in their search for historic climate patterns: medieval Arab history. Physicist Fernando Domínguez-Castro of the University of Extremadura in Badajoz, Spain, and his colleagues, including a historian of Arab culture, examined references to droughts, floods, and hail in ten Arab sources written between 816 C.E. and 1009 C.E.. One text told of nights during a Baghdad summer that were so cold that residents bundled up inside their homes rather than sleeping on roofs as was the custom, the team reported in *Weather*.



The texts, the team concluded, suggest that 10th century Baghdad had more cold spells than it does now. That conclusion agrees with previous hemisphere-wide temperature reconstructions by climate scientists—but it's the first time this has been demonstrated for Baghdad.

Understanding how global climate trends play out close to home is a priority for many climatologists. Yet extracting useful climate information from medieval records will require trust and cooperation between researchers with little in common. "People are reticent," Domínguez-Castro says of the historians closest to medieval archives. "They think, 'These crazy physicists are here to steal my job.' "

Still, the large geographic and historic span of Arab record-keeping is attracting funding from Spanish and German research organizations. Comparing historical records from German monasteries with those from Andalusian courts might also generate fresh insights. "Most climate reconstructions are from the north of the Mediterranean," Domínguez-Castro explains."The southern Mediterranean is climatically very interesting but also very little studied."

FINDINGS

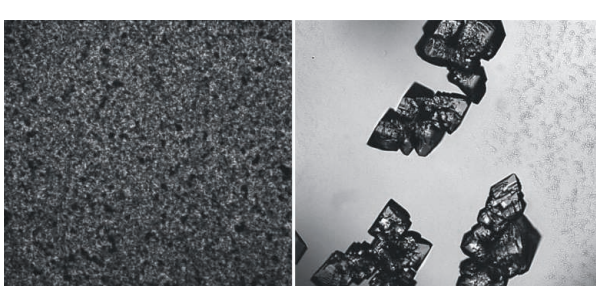
Genetically Engineered Bacteria Could Help Fight Climate Change

Some researchers believe that capturing atmospheric CO_2 and trapping it in buried rocks could lower the risk of catastrophic climate change. Now researchers have found that bacteria can speed that process up.

CO_2 pumped into underground rocks combines with metal ions in the salty water that fills the rock pores and mineralizes into mineral carbonates such as calcium carbonate ($CaCO_3$). That can take thousands of years. To see if they could speed things up, biochemist Jenny Cappuccio and colleagues at the Lawrence Berkeley National Laboratory's Center for Nanoscale Control of Geologic CO_2 put a mix of common bacterial species in a calcium chloride solution in the lab and pumped in CO_2. They found that calcium carbonate formed faster where the bacteria were living than in sterile solutions.

The team guessed that the surfaces of the bacteria were helping the CO_2 hook up with calcium ions. They modified one of the bacterial species, *Caulobacter vibrioides*, inserting a sequence of DNA that reshaped the bacteria's surface to attract calcium ions.

It worked. When the researchers pumped CO_2 into the tanks where the modified bacteria were living, even more $CaCO_3$ solidified than in tanks with unmodified bacteria. Cappuccio reported the team's results 26 February at a meeting of the Biophysical Society in San Diego, California. **http://scim.ag/CO2gen**



Taking shape. Initially amorphous in sterile solutions (*left*), calcium carbonate quickly forms crystals (*right*) when bacteria are present.

BY THE NUMBERS

149 Potential sources of human error in fingerprint analysis, according to a National Institute of Standards and Technology report.

198 kg of CO_2 The estimated carbon footprint—equivalent to burning 90 liters of gasoline—of a shrimp cocktail made with shrimp grown in former mangroves, according to ecologist Boone Kauffman of Oregon State University, Corvallis, reporting at February's AAAS meeting.

Science LIVE

Join us on Thursday, 8 March at 3 p.m. EST for a live chat on the **Science of Forensics**. How are researchers helping police solve tough crimes? **http://scim.ag/forensiclive**

CREDITS (TOP TO BOTTOM): FERNANDO DOMÍNGUEZ-CASTRO *ET AL.*, *WEATHER* 67 (27 FEBRUARY 2012); JENNY CAPPUCCIO/LAWRENCE BERKELEY NATIONAL LABORATORY

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