

LHC is everyone's top priority, adds Alvaro De Rújula, a CERN theorist, "but at what cost? Converting a successful laboratory into a mere accelerator-building company may be shortsighted and would jeopardize the future of high-energy physics not only in Europe, but in the whole world."

At the council meeting, an external review committee delivered an oral interim report. Committee chair Robert Aymar, who heads the International Thermonuclear Experimental Reactor project, says the LHC is scientifically and technically sound. He also praises the CERN staff for their "competence and dedication." As for the lab's current straits, they go back to the 9.3% budget cut when the LHC was approved, says Aymar: "The consequences of the planned reduction in resources in staff and budget and the size and complexity of the LHC were not realistically taken into account."

Next month, in its final report, Aymar's committee will scrutinize CERN management and the impact of cuts on the lab's non-LHC science program and will provide recommendations for financing the LHC. "When you are in a crisis, that's the right time to consider all items," says Aymar. "My wish will be to propose a compromise that goes with CERN's missions and priorities."

TONI FEDER

Creationists Have Designs on Ohio

In what may be a reprise of the theory of evolution controversy that beset the Kansas public education system a couple of years ago, the Ohio board of education is embroiled in a growing dispute between scientists and advocates of a new version of creationism called "intelligent design." Using arguments that focus on academic freedom, the intelligent design proponents are pushing to have their alternative to natural evolution written into the state's K-12 science standards.

The challenge to the theory of evolution arose when a committee of Ohio science teachers and other science education specialists wrote the first draft of new science standards for the K-12 curricula; in that draft, they limited study on the origin of life to natural evolution. Several members of the 19-member state board of education objected and asked that alternative theories, such as intelligent design, be included in the standards.

Intelligent design, a concept first developed in the early 1990s, claims that some biological systems are too

complex to be explained by Darwinian evolution. Advocates assert that the complexity involved in such biological processes as blood clotting and the way bacteria propel themselves through fluid is beyond the reach of natural evolution and can only be explained by some "intelligent designer"—although supporters of the concept generally avoid saying that the designer is "God."

After objections to the science standards committee's recommendations on evolution were raised, the board of education held a debate on 11 March between two scientists and two members of the Seattle-based Discovery Institute, an organization that promotes intelligent design. The debate was dubbed the "Scopes Trial, Part II" by participant Lawrence Krauss, chairman of the physics department at Case Western Reserve University.

Krauss stressed during the debate that what was really under attack was not just Darwinism, but science itself. "We shouldn't invent controversy where there is none because intelligent design isn't science," Krauss told the school board. "I wish we were talking about things that strengthen science and not dilute it." In an interview, Krauss said the problem with such events is that, "the minute you agree to a debate, it adds to the credibility of the other side."

Biologist Kenneth Miller of Brown University, the other scientist who participated in the debate, said the groups attacking evolution "are using politicians to try to short-circuit science itself." While claiming to be scientific, he said, intelligent design advocates "attempt to use the political process to manipulate education to impose quasi-religious views upon science."

The science standards committee submitted a second draft of the standards on 1 April that hold hard to the science-based theory of evolution. Another revision is expected after public comment, and the state board of education has promised to approve new standards by the end of the year. Complicating the issue is an effort by a few state legislators to pass bills mandating the teaching in science classes of intelligent design and other alternatives to natural evolution.

An attempt to incorporate alternatives to evolution into the Kansas public school curricula succeeded in 1999, but was later overturned after candidates backed by science and education groups were elected to the state school board (see PHYSICS TODAY, April 2001, page 32). The issue is being raised again in an upcoming Kansas school board election.

JIM DAWSON

US-Mexico radio telescope. The Large Millimeter Telescope being built 270 kilometers southeast of Mexico City on Sierra Negra is behind schedule and over budget, yet the scientists involved are upbeat.

A collaboration between Mexico's National Institute of Astrophysics, Optics, and Electronics and the University of Massachusetts at Amherst, the 50-meter LMT was supposed to come online this year (see PHYSICS TODAY, April 1997, page 56). Now the world's biggest single-dish millimeter telescope is expected to be completed in 2004, and its cost has climbed from



LUIS MEDINA/UMASS

\$50 million to \$86 million. Project scientist Pete Schloerb of UMass says the technical changes—better reflector panels and a switch to an open-air design—that are largely responsible for the delays and increased cost will pay off scientifically.

Radio astronomers plan to use the LMT to detect and study galaxies in all stages of evolution, measuring spectral lines from gases and radiation emitted from dust. As you look farther and farther out, says Schloerb, the dust emissions get redshifted into the LMT's bandwidth, from 850 micrometers to 4 millimeters. "The cool statistic," he adds, "is, if you take present estimates, we will be able to point anywhere and integrate for one second and discover a new object. We have a killer application."

—TF

Albany wafer R&D center. Ground was broken last month on NanoFab 300, a \$370 million nanotechnology research and education center at SUNY Albany. Named for the 300-millimeter wafers that will be the focus of R&D in nanoelectronics and nanophotonics, NanoFab 300 is planned as a private-public partnership between more than 100 commercial companies and Albany Nanotech, the university's umbrella organization for coordinating research and outreach programs in nanotechnology. NanoFab 300 will boast the only industry-standard clean rooms for training semiconduc-

tor workers in the US and will offer state-of-the-art multidisciplinary research facilities, says Alain Kaloveros, Albany Nanotech's executive director. The center is scheduled to open in 2003 and will have space for 500 researchers.

To kick-start the center, New York Governor George Pataki last year announced a \$50 million donation from the state. This was quickly followed by a \$100 million investment by IBM Corp. Kaloveros says he hopes that nearly 85% of NanoFab 300's costs will be paid by private companies. "The idea is that the center becomes the Bell Labs, the R&D facility for industry. And interest is growing exponentially." —PKG

Barcelona light source. A state-of-the-art synchrotron light source will be built outside of Barcelona, according to an 8 March announcement from the Spanish and Catalan governments, which are splitting the tab. Construction of the Synchrotron Light Laboratory (LLS) is anticipated to cost 120 million euros (\$105 million), and the estimated running cost is €12 million a year. The facility is scheduled to come online in 2008.

The LLS will start off as a 2.5-GeV machine, with the option to upgrade to 3 GeV. Surface and materials science, structural biology, and chemistry are the main foreseen research thrusts. The LLS is the largest scientific project Spain has yet undertaken on its own, says Maria Asensio, a condensed matter physicist who splits her time between Madrid and Paris. "The whole scientific community is very enthusiastic," she says. "This installation is designed to be an interactive project focused on stimulating relationships between academic and industrial laboratories."

Spain is also involved in Soleil, a synchrotron under construction near Paris (see PHYSICS TODAY, November 2000, page 47), although the level and mode of the country's participation are yet to be decided. —TF

MIT-Army nanotechnology center. Imagine a soldier withstanding bullets, jumping over 20-foot high walls, or walking down a mountain with a broken leg. Sound more like science fiction than reality? Actually, the US Army hopes scientists will work toward these types of innovations at a planned \$50 million Institute for Soldier Nanotechnologies at MIT.

The ISN will gather scientists from the army, MIT, and industry to conduct unclassified basic and applied research. So far, Raytheon Co, DuPont,

Massachusetts General Hospital, and Brigham and Women's Hospital have signed on as ISN partners and will together give an additional \$40 million.

Research at the ISN will focus on using nanotechnology to develop uniforms and equipment that can self-adjust to the environment, examine and heal soldiers, store and transfer energy, and protect against chemical and biological agents. For example, MIT is developing polymeric actuators that outperform natural muscle in terms of energy storage and force.

"We hope to deliver some breakthroughs early," says ISN Director Edwin Thomas, a professor in MIT's materials science and engineering department. "Some [innovations] are indeed futuristic and many years from reality." —ACT

Georgia starts NSF-inspired agency. The Republic of Georgia has created its first independent grant-giving science foundation, with help from the US Civilian Research & Development Foundation (CRDF), a nonprofit organization created by the US State Department in 1995. The Georgia Research & Development Foundation (GRDF), modeled on NSF, will work to maintain the country's scientific and technological infrastructure. "The main goal is to support Georgian science and help young scientists have an alternative to emigration," says CRDF staff member Amy Prevatt-Bulat. The GRDF will also help fac-

ulty members who worked in defense-related areas make the transition into civilian research, she adds.

Nearly \$500 000 of GRDF's \$720 000 annual budget is set aside to promote collaborations between US and Georgian scientists. Grant proposals will undergo peer review in both countries. The deadline for this year's proposals is 1 July.

The GRDF is the third such agency in the former Soviet Union in which the CRDF has had a hand: During the 1990s it helped set up similar science foundations in Armenia and Moldova. "Both these programs have been very successful," says Prevatt-Bulat. More information about the new foundations can be found at <http://www.crdp.org/Centers/ecbp.html>. —PKG

Materials journal. *Nature Materials*, the eighth *Nature* sister journal and the first in the physical sciences, will debut in September. Modeled on the parent publication, the new monthly will feature peer-reviewed original research papers, news, editorials, correspondence, and commentaries. It will cover the spectrum of materials research, although founding editor Vincent Dusastre says he expects that "the interface of materials science, biology, and nanotechnology will be highly visible." For more information about submissions and subscriptions, see <http://www.nature.com/nmat>, which also has other information about materials science and nanotechnology. —JB ■

WEB WATCH

<http://www.astrosociety.org/education/publications/tnl/56>

To help counter demands that modern cosmology be banished from K-12 science curricula, the Astronomy Education Board of the American Astronomical Society has written an article for teachers entitled "An Ancient Universe: How Astronomers Know the Vast Scale of Cosmic Time." The article is available on the education board's Web site, *The Universe in the Classroom*.



<http://www.intuitior.com/moviephysics>

Tom Rogers, a high-school science teacher in Greenville, South Carolina, has reviewed the physics that appears in popular movies and found it wanting. On his Web site, *Insultingly Stupid Movie Physics*, he describes the commonest blunders and reviews and rates movies according to accuracy of their physics content.



<http://www.cap.ca/pic.htm>

Physics in Canada Online is the Web version of the bimonthly magazine of the Canadian Association of Physicists. At present, most of the content of each print issue is not available online. However, the magazine's books department is fully accessible. Visitors to the Web site can even volunteer to review any of the recently received books.

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