Bulgarians Sue CERN for Leniency

SOFIA—To most nations, $700,000 a year may seem a pittance for a piece of the action at CERN, the European particle physics laboratory near Geneva. But in cash-strapped Bulgaria, scientists are wondering whether a ticket for a front-row seat in high-energy physics is worth the price: It nearly equals the country's entire budget for competitive research grants. Faced with that grim statistic and a plea for leniency from Bulgaria's government, CERN's governing council is considering slashing the country's membership dues for the next 2 years. Such a move might salvage Bulgaria's participation in CERN, but it may not quell discontent among Bulgarian scientists who argue that other research areas would still get the short end of the stick. And Bulgaria's woes almost certainly have dashed Romania's hopes of joining the elite club this year.

For dues-paying nations, CERN membership has its privileges. Their companies are eligible to bid on CERN projects, for instance, while their scientists get a voice in CERN decision-making. That certainly appealed to Bulgaria, which by 1998 thought it could afford to have its high-energy physics community join CERN. Lab officials agreed to let Bulgaria in if, from the get-go, it paid the full dues (determined by a formula based mainly on member nations' gross domestic product), rather than ramp up contributions as the Czech Republic, Hungary, Poland, and Slovakia were allowed to do a few years ago. Bulgaria agreed, and in June 1999 it became the 20th member state.

"CERN membership is a good investment in the future of the nation," says Roumen Tzenov, one of three dozen Bulgarian scientists now working at the lab. Among other things, he and his colleagues have helped develop key components for the planned CMS detector of the Large Hadron Collider, slated to come on line in 2005.

But trouble began brewing even before Bulgaria formally joined CERN. The NATO bombing campaign against Yugoslavia in spring 1999 destroyed enough bridges to cripple commerce between Bulgaria and Western Europe on the Danube River—hurting Bulgaria's economy and squeezing the government's budget. CERN officials are sympathetic to Bulgaria's plight. "Bulgaria suffered a lot," says Nicolas Koulberg, who advises CERN's director-general on Russia and Eastern Europe. "It became clear that the science ministry would have to pay CERN a big part of its budget." Indeed, Bulgaria's National Science Fund—an agency recently disbanded—last year doled out only about $500,000 for grants in the natural and social sciences, and the government is expected to spend much less this year. Biologists complain that a typical grant amounts to less than $1000 a year.

To many Bulgarian scientists, forking over to CERN the kind of money that would fund hundreds of research projects at home doesn't seem like a bargain. "There is great opposition to CERN membership," says George Russev, who directs the Bulgarian Academy of Sciences' Institute of Molecular Biology. In a recent letter to Bulgaria's education and science minister, Russev and others on the former Science Fund's council called on the country to pull out of CERN and use the money for domestic research.

Facing a rebellion at home, Bulgaria's vice minister for education and science, Christo Balarew, last month petitioned CERN to cut his country's membership fees substantially for the next 2 years. He told *Science* that CERN plans to send a delegation to Sofia this fall to discuss the financial problems and the extent of the proposed fee reduction.

Suffering collateral damage in this dispute is neighboring Romania, which has made a strong bid to join CERN. Lab officials are now worried about Romania's R&D balance sheet—and they admit that Bulgaria's woes have influenced their judgment. "If Bulgaria was all right, Romania probably would have been accepted this year," says a CERN official, who adds that Romania's application is now on hold until at least 2001.

If the CERN council votes in December to cut Bulgaria some slack, that may very well save the lab's latest member state from an ignominious withdrawal. But it is unlikely to fully assuage critics such as Russev. "Even if we pay lower CERN fees for 2 years," he says, "the problem is that the membership is not useful to the rest of Bulgaria's science community." **–ROBERT KOENIG**

With reporting by Richard Stone.

argue that it is dying. "That's very close to the truth," says Kaftanov, who points out that nearly all topflight experimentalists and many theoreticians now spend most of the year abroad. Others insist that the brain drain is only temporary and that most of the scientists haven't permanently emigrated from Russia. "In principle, the Russians return to their home institutes," Koulberg says. And even older facilities like the 70-GeV accelerator in Protvino can still do good science, Denisov says. It now operates for two 2-month stretches a year, running experiments that are hard to do at higher energies, such as searching for exotic resonances and exploring kaon decay. During the experimental downtime between LEP being shut down next month and the LHC being switched on in about 5 years, Denisov says, "I hope we'll have more physicists from Europe coming to Protvino."

Everyone agrees that the gravest concern lies with grooming the next generation of physicists. A couple of years ago, a few legislators were agitating to close down the prestigious Moscow Physical Technical Institute. The problem was that upon graduation, about four out of five students get offers from Western labs and leave. "People were crying that we were only preparing students for careers in the West," Kaftanov says. That threat has gone away for now, but there remain worries about keeping physics alive in Russia. The trend is so alarming that the country's top physicists and institute heads are now discussing holding a review sometime next year of the future of Russian high-energy physics. Tops on the agenda will be survival after the LHC.

Key component. Dipole magnets for the LHC came from a plant in Novosibirsk.

CREDIT: CERN GENEVA

In that regard, Russian scientists haven't ruled out bringing to life their unfinished giant in Protvino. To equip the UNK to its full 3-TeV glory, Denisov estimates, would cost about $1 billion—a sum twice as great as Russia's total science budget. They won't see that anytime soon, but finishing the 600-GeV ring—even after the LHC is up and running—would be reasonable, Denisov argues, because a scaled-down UNK could be used as a fixed-target accelerator for studies on B quarks and neutrinos. But well into the next decade, at least, the Russians will find nurturing environs at CERN, their home away from home. **–RICHARD STONE**