University of Arizona review board rejects what it considers unethical protocols, the most likely result is that "the sponsor (and the FDA) would simply complete the project elsewhere."

As for patient consent forms, Rothman and Michels and their supporters argue that those can be problematic at best. The informed consent agreement is an "escape clause," says Rothman, that puts the burden "on the patient for ethical studies." And Ian Chalmers, head of the Oxford, U.K., Cochrane Center, part of a multinational collaboration to prepare, maintain, and disseminate systematic reviews of randomized clinical trials, calls informed consent a "fiction," pointing out that patients in placebo-controlled trials are rarely if ever told clearly that there already exists an accepted treatment for their condition, and the risks of not getting it are not accentuated. If they were, he says, "they wouldn't go into the trials."

By no means all bioethicists, however, agree with Rothman and Michels. Take Robert Levine of Yale University School of Medicine. At the meeting on Public Responsibility in Medicine and Research where the issue was so intensely debated, he suggested that the Declaration of Helsinki may be the wrong standard for assessing the ethics of clinical trials. It was meant to be a guide to physicians concerned about treating their patients, he says, adding that "what Helsinki calls clinical research is what most other people call compassionate use of a new drug; it's not a controlled trial at all."

While Rothman and Michels are right in calling for more careful justification of placebo controls, Levine concludes, clinical trials should not be held to the standards of the "flawed" Declaration of Helsinki. Those, he suggests, are too rigid because they don't allow patients to choose to accept small risks or temporary discomfort on placebos so that new drugs can be tested.

Whether or not the controversy touched off by the Rothman and Michels article will have any effect on the way clinical trials are carried out is not yet clear. But Benjamin Freedman, a bioethicist at Montreal's McGill University, says the time has come to re-examine the placebo issue once and for all. "The problems had been apparent for some time," says Freedman, "but now the issue is openly joined. We're now going to have to face up squarely to what our ethical commitments oblige us to do with respect to ethical research and the current practice on placebos."

**–Gary Taubes**

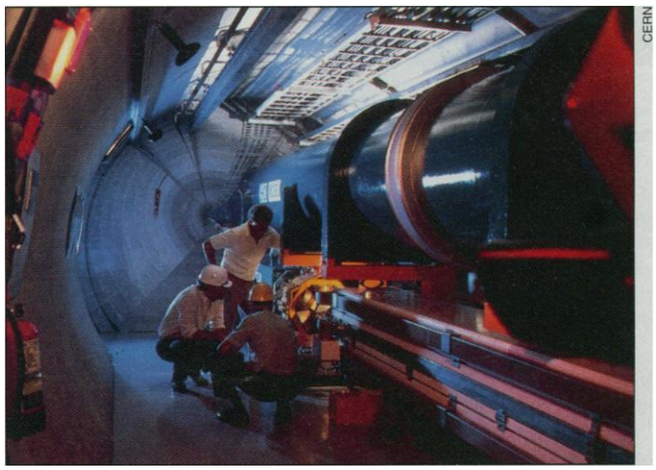
HIGH-ENERGY PHYSICS

# CERN's LHC Gets the Go-Ahead

After 6 months of uncertainty, European physicists got the final go-ahead last month to build the world's most powerful particle accelerator. The member countries of CERN, the European high-energy physics center near Geneva, approved a plan to build the Large Hadron Collider (LHC) in an existing 27-kilometer tunnel built for the Large Electron-Positron Collider. The plan, which had been worked out over the past few weeks (*Science*, 16 December 1994, p. 1799), was endorsed by the CERN council on 16 December (just after the final 1994 issue of *Science* went to press).

For CERN's physicists, that's the good news. The bad news is that the plan is the result of compromises that will inflict some pain on CERN's operations. At the insistence of cash-strapped Germany, host countries France and Switzerland will have to pay extra. Even so, CERN itself must make severe cuts in its budget to support the SFr2.6 billion ($2 billion) project, and the LHC may take 5 years longer to complete than originally planned. "It will not be easy, but it will be possible," says council chair Hubert Curien, France's former science minister. The CERN staff, he adds, is stoical about the coming cuts. "They know the future of CERN must be ensured, and that could not be guaranteed without economies."

When CERN's management first asked the council to approve the LHC last June, it planned to fund the project from CERN's normal budget, plus contributions from nonmember countries such as the United States and Japan. But while all 19 member countries agreed that the collider should be built, they balked at the idea of including uncertain nonmember contributions in the budget. And Germany, still struggling with the costs of reunification and supporting its own particle physics center, DESY, in Hamburg, threw up another roadblock. With the support of the United Kingdom, Germany argued that because France and Switzerland would benefit economically from having the project on their soil, they should cough up additional payments—originally totaling SFr250 million—beyond what they would normally pay as CERN members.



CERN

**Double duty.** As shown in this mock-up, the LHC will be squeezed into the same tunnel as the Large Electron-Positron Collider.

After 6 months of hard bargaining, Germany has not gotten everything it asked for, but it has gained significantly:

- France and Switzerland will have to contribute an additional SFr65 million and SFr60 million, respectively, to the LHC budget.
- Germany's subscription—which should be more than its current 22.5% of the CERN budget because reunification has increased Germany's gross national product—will be held at this level until the end of 1998.
- The total CERN budget will not rise to compensate for inflation in the next 3 years, and after that it will be increased by 1% per year, half the expected rate of inflation.
- These measures will force CERN to cut its own costs by SFr650 million over the project's lifetime.

Although the original plan had the accelerator fully operational by 2003, these budget restrictions mean that the LHC will have to be built in two phases. Some of its 14-meter superconducting magnets will be installed by 2004, allowing the accelerator to operate at an energy of 10 tera-electron volts. This energy will enable physicists to seek the elusive top quark and study heavy-ion physics. The remaining magnets will be in place by 2008, boosting the power to 14 TeV and making possible the search for the Higgs boson, the postulated origin of mass.

This schedule could be accelerated, however, if the United States and Japan chip in. And that may happen. University of Heidelberg physicist Volker Soergel, one of Germany's council representatives, says that several countries, including the United States and Japan, "made clear statements of their intention to collaborate" at the council meetings in both June and December. If they do, Curien says, "contributions from outside will not be used to reduce members' subscriptions; they will be used to reduce the delays."

**–Daniel Clery**