

National Laboratory's unfinished ISABELLE accelerator, recognizing the unprecedented concentration of technical and financial support that SSC would require.

As now envisaged, SSC would attain centre-of-mass energies in the neighbourhood of 40 TeV — sufficient, in the view of current theory, to explore the so-called Higgs sector. Leon Lederman, director of Fermilab, who also spoke here, said that experimental exploration of this energy region is vital to resolving the "crisis" that Lederman says his "theoretical colleagues" now find themselves in. "They're speculating wildly", he says, for lack of solid data.

According to cost estimates developed earlier this year at a marathon session at Lawrence Berkeley Laboratory (some 150 researchers from the national laboratories and universities were, as one participant put it, locked in a room by Department of Energy officials until they could agree on some definite numbers to be used in preparing next year's budget request), SSC could be built using existing magnet technologies for \$3,000 million, with a completion date in 1994. DoE is now considering whether to submit a request for research and development funds in the budget for fiscal year 1986. Lederman says that it would probably take two or three years to develop a definite design that optimizes costs. The "reference design" document produced at Lawrence Berkeley considered three different combinations of ring size and magnet field strength, and concluded that costs would be roughly equal in each case. The original idea of SSC, and thus the name Desertron, was to use relatively low field, "cheap" magnets in an enormous ring that could presumably fit nowhere but the southwestern desert.

Lederman said he considered the \$3,000 million figure to be a maximum, as it assumes the use of existing "dumb" magnet technology, as he put it.

Schopper, on the other hand, placed a price tag of \$500 million on the European version of the proton collider, the cost savings coming from the use of CERN's existing tunnel and injectors. The energy of the machine, however, would be only 10 to 12 TeV if existing magnets technology is assumed, although it could be as much as 18 TeV if the as yet undeveloped Nb<sub>3</sub>N 10-tesla magnets become available in time.

Both Lederman and Schopper spoke of the need to coordinate US and European plans; both also said they had little idea how this could actually be accomplished. Lederman said, however, that it would probably be a political impossibility to persuade the countries in question to build both machines. He also questioned whether the CERN proton collider's energies would be sufficient to explore the Higgs sector.

Schopper, in the face of repeated questions about the relative cost-effectiveness of the two plans, said "It's no use starting a

fight now"; more work needs to be done on the technology before a decision can be made, he said. And, apparently referring to hints of some new and puzzling discoveries coming out of CERN's SPS collider, suggested that in the two to three years needed for technology development, "the physics might be different".

Schopper suggested that another possible add-on to the LEP tunnel — one that certainly would not compete with SSC — would be an electron-proton collider.

Meanwhile, the United States is already worrying about selling the most expensive basic research project yet to Congress. Presidential science adviser George Keyworth was recently in Japan trying to drum up some tangible support from the Japanese Government for the project. And DoE officials are only half facetious when they suggest that the SSC ring might be arranged to pass through at least three states to boost regional support in Congress.

Stephen Budiansky

## Intellectual property

# Consider the monoclonals

BRITISH universities seem to be rebelling against the mounting pressure on them to become more responsive to commercial considerations. The Committee of Vice-chancellors and Principals (CVCP), in a preliminary response to a government discussion paper on intellectual property rights, rejects the idea that universities should seek to protect research inventions with patents wherever possible, citing as an example the "serious disadvantages for generations of investigators" if monoclonal antibodies had been rigorously protected. And in a formal reply to a plea by the Engineering Council to spend more of their grant on training engineers, the committee reaffirms its opposition to having grants specially earmarked for engineering and its distaste for a rapid increase in provision for science and technology at the expense of other subjects.

CVCP dismisses the government's "green paper" on intellectual property, published at the end of last year, as "somewhat superficial". The paper made some radical suggestions on how the Patent Office might be moved out of the civil service and suggested some changes to intellectual property law. But, say vice-chancellors, it pays too little regard to the difficult balance that university researchers must maintain between possibilities for commercial exploitation and their commitment to intellectual progress. And CVCP dismisses the "implied criticism" that academics exchange information too freely and take protection too rarely. Universities have, the committee says, a clear policy on patenting. The government should, before considering legislation, thoroughly examine all aspects of intellectual property, including such problem areas as copyright and computer software. Some are concerned that biotechnology, in particular, might be adversely affected if very broad patents impede research.

Beyond this CVCP does not go, thus perhaps inviting the criticism that it, too, is being somewhat superficial. The committee excuses itself by blaming an unrealistic timetable for comment imposed by the Department of Education and Science. Discussion has had to be brief and consultation has been less than complete. A

fuller response will be prepared in due course.

The committee has however managed to find the time to prepare a full response to the Engineering Council, which earlier this year accused universities of not using their grant in the way that was intended. The council announced that it wanted a ten per cent swing in student numbers from arts-based to science-based subjects within the decade. That objective is thought by vice-chancellors to be totally unrealistic, given the pressures that already exist on the university system, and many vice-chancellors feel the Engineering Council has weakened its case by overstating it. **Tim Beardsley**

## Argentines safe

Washington

THE new democratic government in Argentina is wasting no time in trying to re-establish contacts with expatriate Argentinian scientists and to offer assurances that the personal and political vendettas of past regimes will not be repeated.

Dr Carlos Abeledo, under-secretary for science promotion and director of the national research council of Argentina, was in the United States last week to spread the word among the hundreds of Argentinian scientists here that if they want to return they will be welcome and there will be financial support for them. Abeledo said that he did not expect more than a few dozen to take up the offer this year, but that he was also hoping to involve the expatriate scientists in the country's scientific effort through such activities as reviewing for Argentinian scientific journals, reviewing grant applications, and taking in Argentinian research fellows.

Abeledo was due to meet with some 200 Argentinian scientists at the American Association for the Advancement of Science meeting in New York; the previous week he was present at a gathering of 100 Argentinian scientists now living in France.

Albeledo was among the hundred or so scientists sacked in 1976-77 for political — and sometimes personal — reasons by the government. One of the first acts of the new government this year was to recognize the right of those scientists to return to their positions.

Stephen Budiansky