European accelerators

Social scientists' attack on CERN

EUROPEAN high-energy physicists are so committed to the future of one laboratory, the European organization for nuclear research (CERN), near Geneva, that peer review is no longer a disinterested mechanism for judging the validity of CERN projects, two University of Sussex social scientists claim in a paper in the journal *Research Policy*, published today.

Rather, they claim, "systematic data" on past performance and future prospects of CERN, and laboratories like it, must be collected, and presented in a form "accessible not just to researchers in the speciality concerned, but also other scientists, policy-makers and even the general public". The authors, Ben Martin and John Irvine have, of course, done such a thing.

This paper* is the third and last of a series on CERN, and it concentrates on the decision-making that led to the adoption of LEP, the large electron–positron collider, as CERN's next project. But whereas the authors' previous papers have amounted to no more than historical research, the latest instalment strays into policy statements that are inevitably contentious.

The LEP decision was a mistake, Martin and Irvine imply, made possible by lack of objective external assessment in the peer-review system. LEP should be producing results by 1988, giving detailed data on the Z intermediate vector boson (and other phenomena such as the top quark). But a four times cheaper machine, the Stanford Linear Collider (SLC), may produce similar data a year earlier, reducing LEP's usefulness, Irvine and Martin assert. And although the LEP decision was taken before SLC became a real possibility, it could have been reversed when SLC was approved, the authors have since argued.

Martin and Irvine's earlier studies show, they say, that a clear factor determining the scientific success of an accelerator is its uniqueness. Since LEP will not now be unique, it "raises the question. . .whether such major decisions, which have implications for other areas of basic science. . .should remain solely in the hands of the high-energy physics community".

The authors also say that the US studies of the 40-TeV "superconducting super-collider" (SSC), and similar but less-advanced studies of a "large hadron collider" (LHC) in the LEP tunnel, are a sign that another round in the intercontinental high-energy "arms race" is in the offing.

CERN director-general Herwig Schopper pointed out last week that discussions to avoid duplication of accelerators are already taking place in a high-energy physics panel established at the Versailles summit in 1982, and that SSC and LHC "are not projects yet — there are still various options". Moreover, Martin and Irvine's own work shows that one of the main arguments being used for LEP in the late 1970s was its complementarity with US machines (in particular the Fermilab Tevatron, a proton collider in Chicago).

Even the late-starter (and earlier finisher), SLC, is complementary to LEP, Schopper argues, because it is primarily a machine physics experiment (to see if a linear accelerator could be used effectively to produce colliding beam physics, a technique needed if even higher-energy electron colliders than LEP are ever required). Also, whereas SLC is confined to producing 50-GeV beams, LEP is designed to go on up to 100 GeV. "There will be some overlap in the initial phase, but that I think is a minor point", Schopper says.

Robert Walgate

*"CERN: past performance and future prospects. III. CERN and the future of world high energy physics. *Research Policy* vol 13, no. 6, pp 311–342 (1984).

Campaign for research

Alliance for Science

THE Alliance for Science, a campaign for increased British spending on research and development, was launched in London last week. It has been mounted by three trades unions claiming to represent more than 100,000 scientists and technologists working in Britain. Stan Davison, deputy general secretary of the Association of Scientific, Technical and Managerial Staffs (ASTMS), said that the alliance had grown out of general concern over a considerable length of time. Government, education and industry were all to blame for the decline, he said, and workers in all these fields were represented by the campaign's constituent organizations, the Institution of Professional Civil Servants (IPCS), the Association of University Teachers (AUT) and ASTMS.

Mr Davison argued a case for innovative investment, one of the campaign's catch-phrases. The organizers believe that this is an opportune time to launch the campaign, with bodies such as the House of Lords Select Committee on Science and Technology and the Engineering Council asking that something should be done. The campaign will continue at least until the annual conferences of the political parties next autumn. The organizers are calling for a body for research to do the job that the National Economic Development Council does for the economy.

Ms Diana Warwick, general secretary of AUT, complained last week that the British government underestimates the amount of cooperation between industry and higher education, but said a "balance within universities between basic and applied research" is needed. She said that many developments in solid-state physics and X-ray crystallography originated from academic research programmes, and boasted that the biotechnology department of the University of Wales had turned a redundant dairy into an important centre for biotechnology.

The organizers are downcast that the number of graduate students fell by 20 per cent during 1979–83 because of restrictions on the science budget. And the annual growth rate in expenditure on research and development in Britain is now a third of that in Japan and a half of the comparable figure in West Germany. Twenty years ago, Britain led the field. "It is now very clear", Ms Warwick said, "from detailed reports and the University Grants Committee report, that the cuts have fallen on research rather than teaching. The equipment grant is over £16 million less than what it needs to be to keep pace with rising costs."

Bill Brett, assistant general secretary of IPCS, forecast at the alliance launching that there will be, between the British scientific civil service and the research councils, a further cut of 20 per cent by 1988. He attacked the "new phenomenon" in the scientific civil service of short-term contract research staff. The attendant insecurity was not conducive to satisfactory achievement. "Science has had a bad reputation", he said, "it has been associated with weapons and information technology of the worst kind." IPCS is eager to have people asking whether the United Kingdom is spending enough money on research.

Hugh Barnes

GLORIA scoops pool

A NEW model of the British side-scanning sonar GLORIA is to be built by the Institute of Oceanographic Sciences (IOS) under an agreement signed this week between the Natural Environment Research Council (NERC) and the US Geological Survey. Under the terms of the six-year agreement, NERC, which will lease back the sonar from the Americans, will survey the remaining five million square miles of the US exclusive economic zone, mainly in the Pacific and around Alaska. The mapping of seafloor features that may hold significant mineral deposits is part of a policy of assessing the long-term economic potential.

The total cost of the package, including charter of the research vessel *Farnella*, will be about £12 million. Although the Mark III GLORIA will be US-owned, the arrangement has the advantage of allowing IOS to use the existing version elsewhere. Completion of the new torpedo is planned for March 1986, with surveying commencing that summer. In the interim, mapping of the Gulf of Mexico will be carried out using the existing GLORIA.

Peter Gambles