Showpiece in transition

Zürich

USUALLY, when one of an institute's researchers wins a Nobel prize, it is a time for some gentle back-slapping — the ultimate public relations boost for any research centre. And at first sight, the Swiss Federal Institute of Technology (ETH, or Eidgenössische Technische Hochschule) in Zürich seems no exception. At the entrance to the research tower housing the laboratory of Richard Ernst, this year's chemistry laureate (see *Nature* **353**, 689; 24 October 1991), a handwritten placard, placed by his ETH colleagues, proclaims Ernst's Nobel success.

But the celebrations at ETH may be relatively short-lived, as its professors struggle to come to terms with the most radical overhaul of ETH's research enterprise in the institute's 136-year history. Over the past two years, the 300 professors and 2,500 scientific and technical staff responsible for research at ETH have been directed into 19 new research departments (biological sciences, chemistry, Earth sciences, forestry, pharmacy and the like). The new system has replaced a staggeringly complex array of more than 130 separate research units (mostly based on laboratories led by a handful of collaborating professors), each accountable directly to ETH's president.

At an institute of ETH's size, spending more than SFr200 million (about \$136 million) each year on research, the previous nineteenth-century organization was pushed beyond its limits, says Heinrich Ursprung, ETH president for 13 years until 1987, and now head of the Swiss agency that oversees federal government spending on basic science. According to

Ursprung, ETH is simply too large for the president to be personally responsible for its entire research programme. In 1987, a team of independent management consultants concluded that some delegation of power was essential if ETH was to retain its position as Switzerland's premier research centre.

But the particular scheme chosen by the board that governs ETH and its sister institute, the Swiss Federal Polytechnic in Lausanne, has met with widespread opposition from ETH's professors. Ernst is dismissive: "It's just nonsense." He believes the 19 departments have placed a layer of bureaucracy between the professors and the president that could undermine the very research excellence on which ETH's reputation is built. Rather than the most productive researchers being rewarded with proportionately more money for basic laboratory supplies and travel (as happened when the president controlled their budgets), Ernst fears that the new department heads will take a more even-handed approach, with most dividing their funds more or less evenly among their professors.

The dissatisfaction of high-fliers such as Ernst with this egalitarian prospect is easy to understand, but, according to Peter Stössel, an assistant to ETH's vice-president for research, Ernst's opposition to the new structure is widely shared. Most ETH professors, it seems, jealously guarded their direct line of communication to the president's office ("a republic of kings" is how one ETH administrator describes the old organization), and now feel devalued by reporting instead to a mere head of department.

This resentment might recede given time, but there are other problems with the new structure that may force further changes. Restructuring ETH into departments seems an obvious development to researchers accustomed to the structure of a typical British or North American research university. But the 19 new research departments at ETH were created alongside an identical number of existing teaching divisions. These divisions are again organized by discipline, but because each is responsible for particular traditional degree course curricula taught to ETH's 11,000 students, their interests do not overlap exactly with those of the new research departments.

To an outsider, the decision to create a parallel structure for research management, rather than unifying ETH's organization for teaching and research, looks like a missed opportunity to reduce bureaucracy. Ex-president Ursprung agrees: in 1987, he favoured the creation of 15 to 20 new departments responsible for both teaching and research. Nevertheless, he accepted the solution adopted by ETH's governing board because, he says, "I felt it was a step in the right direction."

Ursprung believes that too little power has so far been devolved from the ETH president. And Hans Bühlmann, Ursprung's successor as president until his return to mathematics research last year, says that perhaps half of the new research departments have taken a "wait-and-see" approach, and have yet to take over full responsibility for their own research programmes.

More changes are likely — Jakob Nüesch, who joined ETH as president last year, from his post as head of research at the Swiss-based pharmaceuticals company Ciba-Geigy, agrees that some tinkering is

Swiss government plans to boost research

Zürich

THE Swiss federal government, long content to let Swiss-based industry pay for the vast majority of the scientific research carried out within the country's borders, now plans to increase its spending on basic science by 16 per cent a year over the next four years. Last month, the lower house of the Swiss parliament approved a budget that will provide up to SFr2,109 million (about £800 million) for Swiss science from 1992 to 1995.

The new federal government science budget sets the maximum amount of money that will be made available over the next four years, and the parliament is free to spend less than the planning figures when it agrees on each year's level of public expenditure. But Swiss science officials are nonetheless pleased with their political paymasters' new-found discovery of the value of re-

search. Peter Fricker, secretary general of the Swiss National Science Foundation (which is due to receive two-thirds of the four-year budget), describes the federal government's action as "a conscientious effort" to strengthen Swiss basic research.

In return for increasing its spending on science, the federal government is taking a greater role in defining the overall direction of Swiss research. The new planning budget includes more than SFr350 million for six new 'priority programmes' of strategic research, designed to underpin the national economy. Three of these (in biotechnology, informatics and the environment), will be run by the National Science Foundation. The others, in materials science, information technology and optics, are the responsibility of the two main research institutes funded directly by the federal government: the Federal Institute of Technology in Zürich and the Federal

Polytechnic in Lausanne. Fricker expects the science foundation's priority programmes to concentrate on funding university-based researchers, and says that experts from elsewhere will be called in to help with their planning.

The Swiss federal government's decision to boost its spending on science, at a time when science spending in several other European countries is stagnating in the face of economic difficulties, comes in response to a 1990 analysis from the Organization for Economic Cooperation and Development (OECD) showing that, while total Swiss spending on research and development (at around 3 per cent of the country's gross domestic product) was near the average for the developed world, the proportion coming from government was the lowest for all of the OECD countries.

Peter Aldhous

needed — but what the final structure will be is still uncertain. Ernst (who, as president of the research committee responsible for distributing some SFr20 million in federal government grants directly to researchers at ETH, is an influential figure) favours the creation of a handful of schools bringing together like-minded departments, responsible for both teaching and research.

Ursprung, too, favours this idea, provided that the deans of the schools are

given real power to control their own research programmes. "I've always felt one should not try to reinvent the wheel," he says. "If I had the power to decide, I'd adopt the structure of a US private research university." But given the inherent conservatism of its academic staff, ETH's final organization will take some time to evolve — Bühlmann's estimate is four to five years. Any attempt to impose change by "brute force" would fail, he says. "It's the Swiss style."

Peter Aldhous

SCIENCE FAIR

Heureka winds up

Zürich

LAST weekend saw the completion of a unique experiment in science communication, when the Heureka exhibition — an ambitious attempt to explain to the public the current research of Switzerland's scientists — closed its gates after a five-month residency in Zürich. Despite an initially disappointing public response (see *Nature* **351**, 597; 20 June 1991), Heureka has achieved its original break-even target of attracting 900,000 visitors. Its director, Georg Müller, can reflect on a commercial job well done, particularly given the opposition to the project from Zürich's city government (largely on environmental grounds), which deprived him of SFr4 million (about \$2.7 million) in expected funding and delayed planning permission until perilously close to the Heureka's opening. But the extent to which the event achieved its aim of communicating the cutting edge of Swiss research to the average citizen remains a matter of debate.

The idea of a research exhibition to celebrate the 700th anniversary of the Swiss federation came originally from Heureka's main sponsors: Switzerland's universities, federal research institutes and scientific academies, and the Swiss National Science Foundation. Under Müller's direction, Heureka has evolved into three exhibitions, rather than one. The scientific organizations' showpiece, a comprehensive display of the best of Swiss research, takes pride of place, housed in a semicircle of eight large tents dominating the Heureka site. But, judging by the distribution of visitors on a cold late-October morning and by sheer wear and tear around the exhibits, a greater draw for most visitors has been the Galileo tower, an exhibition of science through history, and the series of outdoor 'hands on' science exhibits. The latter, including a tightrope-walking bicycle balanced by a heavy weight slung several metres beneath its frame, were introduced by Müller after Heureka

opened, to occupy the younger and more boisterous visitors to the site.

Peter Fricker, secretary general of the Swiss National Science Foundation, seems convinced that the SFr2 million his organization invested in Heureka was money well spent, but accepts that not all of Heureka's visitors have fully appreciated the display of Switzerland's contemporary research. "It is rather high-level," he says. Indeed, the exhibits are surprisingly up to date — the space science section includes data from the Ulysses solar probe, launched one year ago; another exhibit features a solar cell developed by researchers at the Swiss Federal Polytechnic in Lausanne and described in *Nature* only last month (**353**, 737; 24 October 1991).

Fricker says that one aim of the exhibition was to calm public fear of new technologies. "As far as I can tell, we've succeeded rather well." This has been tackled in a commendably open manner: Heureka's exhibit on genetic engineering, for example, includes a carefully neutral discussion of the possible risks and benefits of the technology, and then leaves visitors to pin their own comments to a notice board. In a country that supports a strong environmentalist movement wary of new genetic technology, Fricker notes with satisfaction the absence of political demonstrations at the Heureka site.

Peter Aldhous

EUROPEAN COLLABORATION

Opening up to the east

London

LATER this month, the beleaguered scientific communities of Czechoslovakia, Hungary and Poland will take a stride towards full integration into the mainstream of European research collaboration. At a meeting in Vienna on 21 and 22 November, ministers from the 19 member countries of COST (European Cooperation in Science and Technology) will welcome the East European states into the organization.

Unfortunately for the new members, COST will provide no badly needed research cash — the organization merely fosters collaborative projects, and has no research budget of its own. But COST membership is an important intermediate step towards eventual acceptance into the collaborative research programmes sponsored by the European Communities (EC). Formed in 1971, COST predates the EC's own research programme. Although COST has now been overtaken by the EC's Framework programme and newer schemes such as the French-inspired Heureka as the principal vehicle for European research collaboration, it still has an important role as a testing ground for collaborative research projects that have yet to win EC backing.

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Some of the tents housing Heureka's main scientific display.