British universities

Shrunk system told to grow

LORD Flowers, newly-installed chairman of the British Committee of Vice-Chancellors and Principals, presided over his first meeting last week — and immediately found himself in an unexpected dilemma. The Department of Education and Science has called the bluff of universities that have been protesting about student quotas imposed by the University Grants Committee (UGC), and has asked them to take on more students. The catch is that they will not be given extra UGC funds to provide for them.

The request was made to UGC earlier this month, and the committee has now written to British universities asking if they would be able to accommodate the department's wishes. The government wants universities to admit an extra 5,000 home and EEC students in the academic years 1984–85 and 1985–86, preferably to read vocational and technological subjects. These years correspond to an expected demographic peak in student demand, although the vice-chancellors dispute the government's projections of how rapidly demand will fall thereafter.

Lord Flowers has responded cautiously to the request, saying that universities would try to accommodate the extra students where this could be achieved without lowering standards, but has insisted that it must be for individual universities to make the decisions. Their responses are not expected until the end of the month.

The number of extra students requested is an increase of 7 per cent of the planned intake for the period, and some doubt whether universities will be willing to bend quite this far to broaden educational opportunities. The emphasis on vocational subjects is likely to be especially difficult, since these are usually the most expensive to provide for. As provision per full-time student is under threat in any case, many universities may feel more inclined to protect what they already have. Several universities are also annoyed that such short notice has been given, especially as some were "fined" by UGC for overshooting their quotas last year.

This latest twist in the fortunes of British universities follows hard on the heels of a request to UGC by Sir Keith Joseph, Secretary of State for Education and Science, that universities should consider what would be the effects if the level of provision per student were progressively reduced by 1½ per cent a year for the remainder of the decade.

The committee of vice chancellors — which can do little more than make noises when it comes to money matters — says its members are prepared to consider even this request, but warns that the consequences could be "grave" if the run-down proceeds any faster. The rapid budget reductions of

the past few years, though they had produced an increase in efficiency, had also introduced diseconomies, with the result that some departments now have fewer students than they might. But because reductions in recurrent grants were accompanied by recommendations that had the effect of protecting science at the expense of other subjects, at least part of the spare capacity is in the very subjects the government does not want to expand.

Lord Flowers stressed last week that British universities have now given up the idea that they are all equal, and the key word, for the next few years at least, will be diversity. But the committee is unwilling to accept that universities should be officially

Lord Flowers: no money for increased quotas

categorized according to the amount of research they maintain. It is also "very unhappy" with the suggestion that some universities might concentrate on two-year courses for some subjects, and feels that the pressure to concentrate more on science and technology may undervalue the economic importance of non-vocational subjects.

The desire of the department of education and science for more students is probably not unconnected with the fact that the National Advisory Body for Local Authority Higher Education has recently concluded a planning exercise that will lead to a reduction in the number of students admitted to polytechnics and other colleges of higher education. Recent statistics on admissions to universities show that more suitably qualified applicants are being disappointed, a matter which has been the cause of some political embarrassment.

British universities are now caught in a cleft stick: they do not want to appear to refuse opportunities to potential students, but at the same time, as Dr John Burnett, vice-chancellor of the University of Edinburgh, pointed out, over the next ten years many buildings will reach the end of their useful lives. If universities are too accommodating now, they may find themselves in a worse position at the start of the 1990s, when student demand will start to fall substantially.

Tim Beardsley

Military beam research

Stanford deals with Pentagon

Washington

A PROPOSAL to conduct a weapons-related research project at the Stanford Synchrotron Radiation Laboratory (SSRL) that earlier this year provoked a storm of protest from some Stanford faculty staff and students (see *Nature* 301, p.645) has now been approved by the laboratory's director.

Under the terms announced last week by the director, Dr Arthur Bienenstock, the most directly applied aspects of the work, involving calibration of X-ray detectors for use in nuclear weapons tests, will be carried out at Lawrence Livermore National Laboratory rather than at Stanford as originally proposed. SSRL will also require the researchers to give up one-third of the time on two new beam lines that they will construct at the laboratory to general users of the facility. In accordance with a long-standing Stanford policy, none of the work will be classified.

Some of the strongest opposition to the project had been voiced by staff and faculty at Stanford's Linear Accelerator Center (SLAC), which supplies the electron source for SSRL. Last January, 15 SLAC faculty and 180 staff members signed a petition opposing the project on the grounds that they were being "held captive" to work that they did not wish to be a part of. Four of the five SLAC staff who work on the storage ring that feeds SSRL said this summer that they would ask to be transferred if the project were approved.

A second petition circulated throughout Stanford last spring garnered signatures from 2,000 students and 50 faculty members in opposition to the project.

In announcing his approval of the project, Bienenstock affirmed the earlier conclusion of Stanford president Donald Kennedy and the university's Committee on Research that research projects should be accepted or rejected solely on their scientific merits, without regard to their possible end uses. An SSRL review panel that must approve all proposed research at the facility had earlier endorsed the project.

Lawrence Livermore, Sandia and Los Alamos National Laboratories, together with the University of California, will be jointly responsible for the project. The group is requesting \$5.4 million from the Department of Energy's Office of Military Applications to construct the two new beam lines at SSRL; the University of California has agreed to pitch in \$1 million. The weapons laboratories are requesting the energy department to provide a further \$1 million to improve facilities at Livermore so that the calibration work can be carried out there.

The Department of Energy-supported portion of the project will address three

general areas: X-ray interactions with matter, atomic arrangement of materials containing actinide elements and materials subject to extreme environments such as high pressure, and advanced X-ray optics and detectors. Only the latter — the development of detectors, is weapons-related; X-ray studies in general, however, are relevant to the new focus on ballistic missile defence since President Reagan's "Star Wars" speech last January. The University of California scientists will use the beam lines for protein structure analyses and studies of catalysis.

"We have every reason to believe that a considerable amount of excellent science

will be performed," Bienenstock said. He emphasized that the work on detectors that will be conducted at SSRL will deal with "generic instrumentation techniques" and that a significant fraction of the studies will be aimed at improved X-ray optics for synchrotron research as a whole.

The Stanford faculty meanwhile last week asked the Committee on Research to reconsider the entire question of restrictions based on the end-use of research and the possible conflict between academic freedom of individual researchers and the needs of large-scale research involving more than one organization.

Stephen Budiansky

Chemical warfare

Ambiguity of Cuban plans

THE Cuban army is to establish an advanced training school for "chemical troops", to be staffed by Soviet experts and Soviet-trained Cubans, according to Havana radio. Major Juan Perugorria Cruz, described as a member of the "directorates of chemical troops", told listeners to his broadcast that the school was necessary both because of the level of development of the Cuban Revolutionary Armed Forces (FARO) and the recent "substantial changes in the nature and complexity of chemical warfare technology". The school, he said, would be responsible for the advanced training of officers, command-level training of engineers as "chiefs of platoon for small chemical troop

(Kampuchea). Although some Soviet chemical enterprises, notably *Karabogaz-sulfat*, do produce defoliants which could be used in anti-guerilla actions, these are intended for an entirely peaceful aim — the stripping of cotton leaves before the machine harvesting of the bolls.

If *armamento* is to be interpreted in the defensive sense, however, it is not clear what high technology the Soviet experts

can offer. During the past few years, civil defence precautions against atomic, bacteriological and chemical (ABC) weapons have been stepped up in the border regions of the Soviet Union — notably the Baltic states and along the Turkish-Iranian-Afghan border.

During the past few weeks, a similar exercise has been staged, apparently for the first time, in the far-eastern Maritime Krai — as a response to the hawkish policy of the current Japanese Government. These exercises, however, seem to consist of little more than the evacuation of buildings and the donning of protective clothing. In the Soviet Union, the latter is normally stored at the work-place, and in many cases is simply the normal industrial gear of overalls and masks. A special protective wrapping known as KZD-4 is advised for infants under 18 months (but if this is not available, ordinary blankets or quilts are recommended), while adults who are not members of civil defence units are supposed to prepare their own protective suits out of ordinary clothes, by arranging tight fastenings at wrists, neck and ankles, and then soaking the outfit in an emulsion made of 250 grams of domestic soap, 500 ml of mineral oil (such as motor oil) and 3 litres of water at about 65°C. Vera Rich

Soviet information technology

Academy scents central role

COMPUTERS and information technology should be under the control of a single "non-ministerial" scientific organization, Academician Evgenii Pavlovich Velikhov, a vice president of the Soviet Academy of Science said recently. Interviewed on Moscow Radio, Academician Velikhov suggested that the Soviet Union's position in information technology is "by no means as good as it might seem" and that a "unified scientific policy" in this sphere is necessary.

Computers, as Velikhov stressed, have an important role in the robotization of Soviet industry. This is a priority of Soviet planning, not least because of the threat of a dwindling workforce in some regions of the Soviet Union, where in spite of government incentives, the birthrate remains low. Even more important is the computerization of the planning process itself. Dr Yu Kanyhin, of the Cybernetics Institute of the Ukrainian Academy of Sciences has estimated that the management of the Soviet economy demands the annual preparation of 60,000 million planning documents with an average of 10 pages each. Moreover, some 60 per cent of all such documentation prepared by individual enterprises is, he wrote recently in *Pravda*, superfluous or redundant. Computerization could, he says, cut the bulk of hard-copy documentation by as much as 90 per cent — provided that the systems were standardized. So enormous is the task of standardization for the whole

economy, Dr Kanyhin says, that even the prestigious State Committee for Science and Technology is not competent to cope with the problems. For that a "state organ of high rank" would be necessary.

Dr Kanyhin did not specify what this organ should be. Academician Velikhov was more specific — it is a job, he feels, for the Academy of Sciences. This is no new attitude; earlier this year, the report on computerization and automation which he presented to the academy led the academy to establish a special "Section for Information Science, Computer Technology and Automation". At that time, Academician Velikhov explained that the academy had "taken a historical decision" in assuming completely the scientific leadership" for this problem since it possessed the research potential to provide the necessary hardware and software.

In the recent radio interview, however, he went considerably further, suggesting that as well as providing the systems, the academy should decide where and how they should be introduced. Although casting no direct aspersions, he pointed out, in general terms, the "enormous losses" that could be incurred if wrong decisions were taken "at such a colossal pace of development". His emphasis that a "non-ministerial" scientific organization" should perform this task, however, seems to indicate a less than perfect trust in the bureaucrats. Vera Rich

units" and of engineers in charge of the development and maintenance of the chemical troops' *armamento*.

The word *armamento*, which can mean either offensive or defensive armaments, poses problems. If Major Perugorria really meant chemical weapons, then this is a gaffe beside which Fidel Castro's statement in 1980, that "scores" of Soviet cosmonauts-elect had been killed in training, pales into insignificance. For the Soviet Union is strongly committed in all appropriate international forums, to a total ban on all chemical weapons, and steadfastly denies ever having supplied such agents to the various theatres of insurgency where they have appeared.

According to the Soviet side, such weapons are either of United States origin (Eritrea) or else natural substances such as pollen or bee excrement which have caused unjustified panic among natives