

strains, ARC has no ready outlet but individuals have sometimes had to contend with the rather persistent advances of some of the several American companies that have been set up in advance of any British counterpart. A special relationship with a company, preferably British, would therefore suit ARC well.

For its part, BTG is believed to have board approval for starting the company and to have a managing director in mind. It has not, however, yet found a scientific director and has met with some refusals already.

One problem facing any potential scientific director is the need to ensure that the company is profitable within five years. That was also the BTG stipulation for Celltech but the problem is greater in plant breeding because the genetic manipulation of plants by modern techniques is far less advanced than is that of bacteria, which Celltech use to make products of commercial value, such as rennin.

Nevertheless the optimists believe that profits could be made within five years by concentrating initial efforts on the improvement of bacterial strains, particularly the nitrogen-fixing *Rhizobium*, which are used to inoculate crop plants and on the development of techniques of clonal and meristem propagation.

Finance for the new company is being arranged by BTG which is almost certain to provide at least one third of the money from its own, governmental coffers. The rest will be raised from private sources.

Peter Newmark

University admissions

Still squeezed

Applications from home and European Community students for undergraduate courses at British universities are likely to be six per cent up this year on last, according to figures released by the Universities Central Council on Admissions (UCCA) (see table). But admissions to courses starting in October 1982 are expected to be down on admissions in October 1981.

This is no surprise. The government has implemented its policy of limiting university places just when the number of 18 year olds in Britain is increasing. Hence, the previous policy of gearing university places to demand has been abandoned. The Department of Education and Science, in recent evidence to the House of Commons Public Accounts Committee, has thrown

light on how this policy may affect potential students. The table below shows the department's estimate of the numbers of potential students that may be deprived of a university place in the academic years 1981-82 to 1983-84.

Understandably, universities hope to make up the fees lost from home students by taking in more students from overseas. But their aim has been made more difficult since the government removed the subsidy from overseas student fees. The figures clearly show that full economic fees have deterred a high percentage of potential overseas applicants.

The number of overseas admissions, however, is not necessarily a constant proportion of applications. UCCA statistics suggest that the shortfall in acceptances of places from overseas students in October 1981 over October 1980 was only 19 per cent, compared with the 34.5 per cent shortfall in applications. But statistics compiled by the University Grants

Annual percentage change in applications for undergraduate courses at UK universities

	1980 over 1979	1981 over 1980	1982 over 1981
Home students	+3.5	+4	+6*
Overseas students	-12	-34.5	-20*

*Estimates.

Committee (UGC) suggested an even smaller shortfall in overseas admissions: only two per cent in 1981 over 1980. This apparent discrepancy seems to be explained by the fact that UGC includes admissions for more non-degree undergraduate courses than does UCCA. So it seems that overseas students are now opting for shorter, less costly courses.

Last week, the House of Commons Public Accounts Committee published the report of its findings on the administration of university grants. The committee seemed pleased with the move by the education department to reduce the amount of university income not subject to cash limits by transferring the grant paid to home students for their fees directly into the universities' purse. The universities are praised for keeping their student intake on target last October (a 4 per cent shortfall over the previous year) — but the polytechnics, and other institutions of higher education, come in for a drubbing for increasing their intake by 18.2 per cent over the previous year. The committee's report urges that the body now being set up to control higher education outside the university sector be developed quickly with full co-operation of UGC and laments the fact that steps to coordinate all aspects of

higher education had not been taken before the cuts to the universities.

The parliamentary committee also seemed satisfied by assurances that the universities are taking care not to offer new tenured appointments with no redundancy clause. The Committee of Vice-Chancellors and Principals has been looking at more flexible forms of contract.

Judy Redfearn

US research support

Question of size

Washington

In coming weeks, the US Congress will probably pass legislation that would give a major shot in the arm to small research and development firms in the United States, many of which suffer in the present economic climate, yet which are major sources of new technical inventions. The legislation is not final, however, and is subject to considerable opposition voiced by spokesmen for the universities and government-sponsored basic research.

The National Science Foundation (NSF) estimates that there are 13,000 small firms in the nation, defined as independently owned firms with 500 or fewer employees and performing research and development work. Although numerous, accounting for 85 per cent of firms involved in such work, these small companies in fact spend only 4 per cent of all industry research and development dollars. In contrast, giants such as McDonnell Douglas and IBM spend 87 per cent of US industry's investment research.

Yet there is ample evidence that most innovations come from small firms. One 1976 study showed that small firms produce 24 times as many innovations per research and development dollar as large ones, even though the small firms receive only 2 per cent of total federal support for industrial research.

Small business found a champion last year in Warren Rudman a freshman republican senator from New Hampshire. Rudman introduced a bill that would set aside one per cent of all federal research and development funds — which total some \$40,000 million — for small firms. They would compete for the money by applying to separate federal agencies for grants, awarded on a peer review basis, as seed money. If the work was fruitful, some firms would qualify for follow-on funding. In a third phase, the money would have to come from the private sector, or from other government sources if the government was interested in the company's work.

The plan was modelled on the Small Business Innovation Research Program run by NSF, and a newer, similar programme run by the Department of Defense. The NSF programme gave some \$5 million in seed money to 42 small firms in 1977. By 1981, the 11 of them that qualified for follow-on funding had

No. of home students, aged under 21, entering university (thousands)

	1980-81*	1981-82	1982-83	1983-84
UGC targets	67.3	65.2	63.1	60.9
Target to maintain 1980-81 age participation rate†	67.3	68.5	70.4	69.5

* Actual intake

† Age participation rate is the percentage of 18-21 year olds in the population entering university, which was 7.5% in 1980-81.