

Science teachers

British attempt solutions

THE shortage of teachers of science, technology and mathematics in British schools prompted last week a string of proposed remedies, including the appointment of retired engineers and scientists to teaching posts, dropping the entrance requirements of universities and increasing the pool of supply teachers.

These proposals emerged at a conference in London, where representatives from 51 universities, polytechnics and colleges responded to the British government's consultation document on the shortage of specialized teachers. The government paper, *Action on Teacher Supply in Mathematics, Physics and Technology*, published in August, took the gloomy view that the present crisis will deepen as a technologically based society demands more from its workforce.

Britain needs more than 2,500 physics teachers alone to make up the shortfall, claims the Association of Science Education. At least 20 per cent of physics teaching is done by the unqualified. It is the same in mathematics and technology, where nearly a third of mathematics and a half of technology teachers are inadequately trained.

A statement signed by the universities, polytechnics and colleges says that "shortages of well qualified mathematicians, physicists, computer specialists, engineers and technologists are acting as a brake on economic growth, pushing up pay above the level of inflation and sucking the best staff out of teaching jobs in schools and higher education." The situation is aggravated by very few students applying for courses in these subjects.

The University Grants Committee, which controls the purse strings of the British universities, suggested that universities should be able to lower their admission requirements for courses for teachers in mathematics and physics; £1 million will be available in 1987-88 "for increasing the supply of mathematics, physics and CDT teachers in schools".

The Treasury announced last week that companies who second professionally qualified employees to assist education will qualify for tax relief. Industrially based mathematicians, physicists and engineers near retirement age should be encouraged to retire early and switch to teaching, says the council. **Bill Johnstone**

• British teaching problems are but a reflection of those in the United States. Last week, 90 of 126 invited research universities joined the Holmes Group; while 25 rejected the invitation. The group calls for more graduate teachers and stronger links between schools and universities.

Biotechnology companies

One falters, another forms

DESPITE its recent successful sale of stock worth \$40 million, Biogen, one of the first and best-known biotechnology companies, is not sitting pretty. Indeed, it has decided that it can no longer keep the Geneva end of the business going. Bryan Sautelle-Smith, managing director of Biogen SA in Geneva says that he is in discussion with a number of companies that might become joint partners in his company. The alternative is that Biogen SA is sold.

The financial results for the third quarter of 1986 illustrate the problem faced by Biogen NV, the parent company of both Biogen SA and Biogen Inc. in Cambridge, Massachusetts. Biogen NV has already accumulated a net loss of \$20.5 million this year, having lost almost as much in the whole of 1985. Worse still, 1986 revenue so far amounts to only \$8.5 million, half the figure of this time last year. Jim Vincent, who replaced Walter Gilbert as chief executive of Biogen just over a year ago and who is now also chairman of the company, says that the decline is mainly due to the scheduled end of payments from collaborators and to fluctuations in revenues from licensing agreements. Vincent is determined to break even as soon as possible and with few prospects of greatly increasing income in the immediate future his only option is drastically to cut costs.

Like most biotechnology companies, Biogen is faced with the fact that its revenues from sales are still small. It receives some income from the sale of hepatitis B core antigens for diagnostic test kits. And it is expecting to receive increasing royalty income from the sale of alpha interferon by the Schering Corporation, for which it developed the product. (Schering, like Monsanto, has recently sold its substantial shareholding in Biogen.) Alpha interferon received UK approval for use in hairy-cell leukaemia this year and is approved in some countries for use in the treatment of multiple myeloma and Kaposi's sarcoma, a condition often found in patients suffering from AIDS (acquired immune deficiency syndrome).

Hopes for increased sales revenue hinge in particular on the use of gamma interferon in the treatment of rheumatoid arthritis. Trials in West Germany are claimed to show its therapeutic value. Bioferon, a company jointly owned by Biogen SA and Rentschler Arzneimittel GmbH, is hoping soon to receive approval for the sale of gamma interferon for use in rheumatoid arthritis in West Germany where it has patent protection.

While Biogen savours the problems of adolescence, a new biotechnology company is launched this week in Britain.

Rising like a phoenix from the ashes left behind when Monsanto decided to axe the UK laboratories of its subsidiary G.D. Searle almost a year ago, British Biotechnology Limited starts with £2.5 million venture capital, about twenty ex-Searle staff and more than a touch of patriotism.

Fundamental to the hopes of the new company, situated in Cowley on the outskirts of Oxford, is the expertise in gene synthesis built up at Searle. Most of modern biotechnology is built on the isolation of genes and their manipulation, but British Bio-technology will synthesize and assemble parts of genes from scratch, enabling the production of hybrid proteins designed to have improved therapeutic properties. Dr Brian Richards, chairman of the new company, says that he has been careful to ensure that the patents for specific aspects of gene synthesis held by Searle do not preclude the pursuit of the general approach. A more enterprising plan is to synthesize a variety of carbohydrate groups that can be attached to the proteins, again in the hope of improving their therapeutic value.

Collaboration with established pharmaceutical companies is the initial goal of British Bio-technology. Two major projects are under discussion. One is for a novel thrombolytic agent, produced via a synthetic gene. The other is for an enzyme inhibitor made by organic synthesis, the other general technique on which the company is founded. With the help of an advisory board that includes leading British experts on AIDS, the company will examine the design of drugs against the disease and antiviral agents in general. Arthritis and bone disease are two other major targets.

The initial £2.5 million, which buys 45 per cent of the company's shares, will support the growth to about 80 staff in the next 18 months or so. Apart from the additional income from contract research, British Bio-technology also expects considerable income from the sale of their synthetic genes and carbohydrates to customers in industrial and academic laboratories.

Both Richards and Dr Keith McCullagh, the company's chief executive, are keen to tap British expertise, not least around the corner at the University of Oxford, and are proud of the 'British' in the company's title. To use it, they had to satisfy the government-run Companies Regulation Office that they were both British and pre-eminent. They will now be flying the flag alongside their neighbours in Cowley, British Leyland, the ailing remnant of the UK car industry.

Peter Newmark