The Looming Budget Crisis in Britain's Labs

The chief funding agencies may be forced to close some major facilities or even withdraw entirely from some fields of research

Increasingly dire warnings are emanating from leaders of Britain's scientific community over the damage which, they claim, will result from a severe financial squeeze on the nation's research budget. The problems stem from the fact that the government has refused to permit any significant growth in research funding at a time when costs are going up sharply.

Last week John Kingman, the chairman of the Science and Engineering Research Council (SERC), claimed that if current restrictions on the science budget continue, the result would be a "steady decline" in the volume of research that the council will be able to support. He added that the council is already having to consider withdrawing from some major scientific activities.

Indeed, 2 weeks earlier, Kingman had announced that the council is to carry out a top to bottom assessment of all the research programs that it supports in order to identify areas where it might be able to make deep cuts, such as closing down a major research facility or substantially reducing support for university research groups. The scientific community would have to prepare itself for some "major surgery" ahead, he warned.

The results of this review will be presented to the government next February, as part of the preparations for the following year's science budget. They are expected to be combined with the conclusions of another review already under way on whether Britain should remain a member of the European Organization for Nuclear Research (CERN)—indeed whether it should withdraw entirely from the field of high energy physics (*Science*, 20 April, p. 266).

Kingman said last week, however, that even if this were to be done, it would not solve the council's long-term funding problems.

Kingman was speaking at a press conference to present the annual report for the SERC, which showed that its budget increased from $301 million to $325 million in current dollars between the financial years 1982/83 and 1983/84, a growth of 7.9 percent. The budget for the current year, 1984/85, has been fixed by the government at $342 million a further increase of 5.2 percent.

These figures are roughly in line with the rate of inflation in Britain. However, the SERC has been faced with additional costs, such as the increased burden of subscription to international facilities caused by the fall in the value of the British pound (only some of which has been met by the Treasury), scientific equipment purchased in dollars, and salary awards to scientific staff.

Thus, despite the recent initiation of several new research facilities, such as the Nuclear Structure Facility at the council's Darsbury Laboratories, Kingman writes in his introduction to the report that "it is distressing to note that the SERC has been unable to support many promising new ideas due to a lack of funds."

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His concern was echoed by Peter Cadogan, head of research at British Petroleum and chairman of the SERC's science board, who told the press conference that the board was now able to support only 75 percent of its so-called alpha-quality funding requests—those to which committees in the separate scientific disciplines had awarded top priority.

Cadogan has been largely responsible for persuading the board to focus on the need for sustained funding in certain areas of "core science" such as physics and mathematics, biology, and chemistry. In a report published by the board this summer, he wrote that fundamental research in such fields was "crucial in underpinning the science based sector of the national economy."

So far, however, the British government has preferred to see increases in research funding targeted toward areas with more explicit industrial applications, such as information technology and biotechnology. Cadogan describes current funding for basic research in core sciences—about $7.5 million for each of the three areas listed—as "a pittance" when compared to other advanced countries such as the United States, and said that a substantial increase was needed to enable Britain to remain competitive in international markets.

Unless the government changes its strategy of keeping the overall science budget on level funding, warns Kingman, the situation will get worse before it gets better. David Phillips, the chairman of the advisory board which coordinates the budgets of Britain's five research councils, has recently estimated that a continuation of present trends could eventually lead to a 25 percent reduction in the overall volume of scientific research they are able to support.

It is in such an atmosphere that increasing calls are being heard in Britain for its scientists to identify those fields in which they wish to remain active, and those they are prepared to sacrifice. Peter Swinnerton-Dyer, for example, the chairman of the University Grants Committee which is responsible for distributing the basic support grants for both teaching and research to Britain's universities, recently said that the time has come for Britain to decide which areas of science it was prepared to opt out of in order to sustain world-class research in other fields.

Swinnerton-Dyer said it is no longer realistic to continue spreading resources increasingly thinly in order to maintain a presence in every field of science. Nor should Britain's scientists go on telling themselves that "prosperity is just around the corner and soon there will be enough money to exploit properly every research opportunity."

Another result is likely to be an increased willingness on the part of British scientists to collaborate with other European countries in the design of large-scale experiments and the construction of new research facilities.

A special committee established earlier this year by the SERC to examine the future of space science in Britain, for example, has just recommended to the council that as financial restrictions continue to bite, top priority should be given to supporting new projects through the European Space Agency.

The prospect for future collaboration on larger European facilities now on the

drawing board is also expected to play a significant role in the debates on levels of support for the SERC's own domestic facilities, such as the Synchrotron Radiation Source opened last year at its Darsbury Laboratories, and the new Spallation Neutron Source, due to start operation toward the end of this year at the Rutherford Laboratories.

So far, the Conservative government has given little indication that it is prepared to meet the scientific community's request for extra funding. Sir Keith Joseph, the secretary of state for education and science, has preferred instead to draw attention to the government's commitment to hold funding level, and appears to be waiting for the community to decide on its own priorities within the constraints that this has imposed.

In contrast, the opposition Labour Party has been quick to pick up the scientists' complaints. In a recent letter to the London *Times*, Jeremy Bray, the Labour Party's chief spokesman on science and technology, warns that the SERC's analysis of its plight painted "an overall picture of intellectual atrophy going far beyond damage done to the reputation of the government to sapping the vitality of science, engineering and their applications in Britain far into the future."—**DAVID DICKSON**

New Jersey Votes a High Tech Bond Issue

New Jersey voters on election day approved a $90 million "Jobs, Science and Technology Bond Issue" that will put substantial sums of money into universities within the state. The vote put New Jersey one up on many of the states that have put public funds behind programs designed to promote high technology development.

The bond issue referendum, which received 60 percent of the vote, was backed by Governor Thomas H. Kean, got a strong bipartisan endorsement from the state legislature, and had broad-spectrum support from business, labor, educators, and citizen groups.

New Jersey followed a pattern established in other states by creating a Governor's commission on science and technology to analyze the state's economic development needs and make recommendations for action. The provisions in the bond issue were based directly on the report of the commission delivered at the end of 1983.

The largest portion of the funds, $57 million, is earmarked for the development of advanced technology centers at New Jersey's research universities. Centers are planned in biotechnology, hazardous and toxic substance management, food technology, and industrial ceramics. And $15 million will be set aside to fund centers in new high tech areas when they emerge. Most of the advanced technology centers are expected to follow the model of academe-industry cooperation set in the cooperative research centers supported by the National Science Foundation (NSF). In these centers, industries pay an annual sum to participate; research projects are designed to reflect the interests of academic and industry participants.

New Jersey has a heavy concentration of research-oriented industry, including pharmaceutical and chemical companies. The centers are designed to enhance opportunities for growth in such industries, and, in the case of the hazardous waste center, to deal with problems of public health and the environment they may pose.

Absent from the plan is the sort of major effort to encourage the development of electronics R&D and manufacturing that has figured in the initiatives of many states bent on high tech development. According to Edward Cohen, executive director of the governor's commission, the panel made a basic decision against recommending an industrial policy based on the government deciding which industries had the greatest growth potential. He said the commission looked carefully at existing industry in the state and asked, "What makes sense for New Jersey?" The aim is to make possible greater interaction between industry and academic research and then to let the marketplace operate.

In addition to establishing the high technology centers, a major purpose of the New Jersey program is to bolster the educational infrastructure supporting the growth of high technology industry. Thus, the balance of the bond issue money, some $33 million, will go toward building new labs and classrooms and buying technical equipment to develop science and engineering programs at the state's public and private universities and 2-year colleges.

While New Jersey ranks among the leading states in high technology industry, it does not have high-powered research universities comparable to those in neighboring states, such as Massachusetts, New York, and Pennsylvania. New Jersey began late in expanding its public higher education system and Princeton, its best-known private university, is regarded as strong in basic sciences but does not have medical or engineering schools.

New Jersey, which does not have a state income tax, has experienced periodic difficulties in finding state funds for its education system, particularly during times of economic stress. For example, a major bond issue for higher education was turned down at the end of the 1970's. Observers attribute the success of the high tech bond issue in part to the emphasis its sponsors put on job creation and also say that the economic recovery made voters more receptive to funding issues generally.

Cohen notes that the New Jersey bond issue is part of a larger agenda. For example, Princeton, Rutgers, and the Institute for Advanced Study are engaged with a group of heavyweight institutions from other states in a consortium bidding to win a major NSF-sponsored supercomputer project for location in New Jersey. Legislation has been introduced for establishment of an advanced technology center in agriculture with $15 million in funding separate from the bond issue. Of broader import, the governor and leading legislators are committed to improving the climate in the state for high technology industry. On the list are statutory and regulatory changes and actions to encourage increased availability of venture capital and offer assistance to the start-up of fledgling firms. Success of the bond issue has increased the sentiment for making the science and technology commission a permanent body. New Jersey officials concede that the state still has a long way to go to achieve its high tech aspirations, but at least, as Cohen puts it, "with the bond issue, we're on our way."

—**JOHN WALSH**