

generating joint government and industry support for long-term research, and already approved by Congress with a budget of \$12 million for the first year. In his budget proposals of two weeks ago, Mr Reagan said that "federal financing of long-term research to benefit a particular industry is an inappropriate allocation of federal funds". He is proposing to rescind the full amount appropriated by Congress for the current year, and to terminate the whole programme.

At the National Science Foundation, schemes for encouraging greater technological innovation in small businesses, and for forging closer links between industry and universities, will remain in force, but will not get the substantial increase in funding that the Carter Administration had promised as part of its innovation package.

Support for small industries innovation, for example, was to have been almost doubled, from \$7.5 million to \$14.5 million next year, following its earlier success, but will now be cut back. So too will increased funds for engineering education, but the proposed 20 per cent increase for engineering research is likely to remain.

In contrast with the cuts being proposed in measures which would increase federal involvement in the innovation process, other steps initiated by Mr Carter to reduce the federal role have been warmly endorsed and built upon by the new Administration.

Efforts to reduce the burden of health, safety and environmental regulations, for example, have already been expanded. As expected, Mr Reagan has proposed, along with his budget reductions, a set of regulatory reforms which would submit all new and existing regulation to strict cost-benefit analysis.

Similarly, additional patent reform legislation has already been introduced into the new session of Congress which would expand on Mr Carter's patent reform bill giving universities and small businesses patent rights on federally funded research.

David Dickson

## UK research councils Allen accused

The UK Science Research Council is being hauled over the coals for sloppy bookkeeping. Its chairman, Sir Geoffrey Allen, is to appear before the Public Accounts Committee of the House of Commons on 17 March to explain irregularities in the council's funding in the financial year 1979-80. Details are hard to obtain because the council, usually frank, is saying nothing for fear of offending parliamentary privilege.

Part of the problem stems from the cash bonus that Mrs Shirley Williams, then Secretary of State for Education and Science, obtained for the research councils in 1978. The council's share was £33 million over the four financial years

1979-83. A circular was thereupon sent around universities asking for applications to the council to replace worn-out equipment: truck-loads of applications followed, worth £37 million, of which the council awarded £7.5 million. In the event, a change of government followed, funds were cut and the council received only £5 million.

Another question mark hangs over the university grants current in March 1980, which represented an increase in value of £31 million (34 per cent) over the previous year. There appears to be no indication that this large increase was planned. The exact amount of overspending remains unclear, but much of the money was spent by the Science Board (responsible for such topics as physics of solids and liquids, chemistry and biology). The new Spallation Neutron Source at the Rutherford-Appleton Laboratory at Chilton seems to have been a principal beneficiary.

Other misdemeanours are procedurally more serious. The Auditor General, Sir Douglas Henley, has already complained that the postponement of certain payments into the 1980-81 financial year, as part of an attempt to alleviate the financial deficit, contravenes government regulations. The Public Accounts Committee will also, no doubt, be asking about the council's calculation that the capital value of a site near Slough, yet to be vacated, could be regarded as a part of the income for 1979-80.

The council appears to have been the victim of government financial vagaries combined with inflexible accounting procedures. But the extent to which the problems are also self-generated will not be clear until 17 March.

Sir Geoffrey Allen, formerly the council's accounting officer, came to the end of his spell as chairman in October. The name of his successor is expected to be announced within a few weeks.

Philip Campbell

## Soviet research

### More home growth

The new Soviet Five-Year Plan calls for all branches of the economy to be brought up to the "most up-to-date levels of science and technology". Just how to do this is clearly causing the Soviet leadership considerable anxiety. At the Twenty-Sixth Congress of the Communist Party of the Soviet Union last week, Mr Brezhnev called on the whole scientific establishment to reassess the research and development basis of Soviet industry and to propose ways of regrouping the "scientific forces".

Not only the Academy of Sciences and the State Committee for Science and Technology should take part in this audit, said Mr Brezhnev, but also the science-based industries, including defence. Since Soviet military research is organized quite

separately from the civil sector, this last proposal suggests genuine concern, not simply congress window-dressing.

Mr Brezhnev singled out a number of fields of technology where "impermissible sluggishness" had led to delays in implementing "promising developments" — the continuous casting of steel, powder metallurgy, custom-built DC transmission lines and high-strength artificial fibres. Falling behind foreign competitors, he said, leads to massive expenditure of foreign currency for equipment and technology which the Soviet Union could have produced at home. Soviet potential technological self-sufficiency has been a feature of propaganda speeches since the January 1979 United States embargo. Mr Brezhnev's speech, however, referred rather to one of the major concerns of Soviet research policy: why is there often so long a gap between obtaining a new result and implementing it in production?

Mr Brezhnev suggested two possible lines of reorganization, which appear mutually contradictory. On the one hand, he stressed the Central Committee's support for an increased responsibility for the Soviet Academy of Sciences, and argued a "flexible and mobile" organization of research that would not tolerate "fruitless laboratories and institutes", but would respond "attentively" to the needs of scientists for equipment, instruments and pilot plant facilities. Taken in isolation, these remarks suggest more scope for serendipity and the capacity to switch rapidly from one line of research to a more promising alternative.

Mr Brezhnev went on the say, however, that the major sciences (including basic research) should concentrate more on solving "key national economic questions" and "discoveries capable of making genuinely revolutionary changes in production". The formulation of these tasks, he said, is the task of the central planning bodies and the State Committee for Science and Technology. The exact spheres of competence of the Academy and State Committee are frequently difficult to define, and Mr Brezhnev's speech does not make the issue easier. The previous Congress (1976) had made the Academy responsible for coordinating all science throughout the country, and although, to judge from the report to Congress of Dr Anatolii P. Aleksandrov, the Academy's president, much still remains to be done, there is no suggestion that the task should be taken out of the Academy's hands.

Dr Aleksandrov's report, moreover, reviewed a wide range of recent achievements, from particle physics and cosmology to the utilization of Estonian shales and the need to develop coal liquefaction and gasification techniques. Academy scientists, he said, have made notable advances in thermonuclear fusion, and in prolonging the life of agricultural machinery.

Discussion of future plans, at a Congress

of this type, is always to a large extent, orchestrated. A clear example was the intervention of Sharaf Rashidov, Party chief of the Uzbek SSR. Mr Brezhnev had called for a new food production programme. Mr Rashidov suggested that a "tremendous contribution" could be made by diverting the northern rivers to the Volga Basin and the Siberian rivers to the steppes of Kazakhstan and Central Asia. Plans for such proposals, however, are of course already well under way, and a considerable engineering effort earmarked for them in the new Five-Year Plan.

Dr Aleksandrov, however, had a lightertouch. One of his major proposals began as an apparent piece of by-play with Mr Brezhnev and the Leningrad Party chief Grigori Romanov, about the development of an anti-influenza spray which Mr Brezhnev had requested at the last Congress. (The very fact of such jesting is, in itself, a suggestion that the Academy's auspices are exceptionally favourable at present). The successes which Dr Aleksandrov reported — 10 million doses of the spray produced in 1980, 25 million scheduled for 1981, and the incidence of influenza in Leningrad cut by two-thirds, were simply a build-up. Soviet microbiological production, suggested Dr Aleksandrov, should be reorganized under a special Ministry of the Biotechnical Industry. **Vera Rich**

## German nuclear power

### Closures and delays

Four German nuclear power stations, representing a third of the country's 10,000 MW of nuclear power, are to close for at least a year for the complete replacement of their primary cooling circuits. The Bonn Nuclear Safety Commission ordered the closures after deliberating for three years over this issue, involving General Electric Company-designed boiling water reactors (BWRs) constructed under licence between 1973 and 1979.

Small leaks and cracks had developed in the primary circuit of these reactors which carry cooling water through the nuclear cores. The cracks appeared to be spreading by stress corrosion (combined effects of mechanical and thermal stress and chemical corrosion). The commission has concluded that uneven quality, poor choice of materials, and a thin gauge of steel for

the pipework were to blame, and that the circuits must be replaced to avoid the danger of a potentially catastrophic cooling failure. The cost of replacement has been estimated at DM 1,200 million (£250 million), with an equal sum for the loss of electricity sales. However, the four responsible utility companies have decided not to close down all the reactors simultaneously. One is already being refitted, and should be on-power again by the summer; and the others will be dealt with in sequence.

The boiling water reactors have not been a success, and Germany is now concentrating on the Westinghouse pressurized water reactor design, originally licensed by Siemens. Siemens and the constructors, AEG, are now merged in the company Kraftwerk-Union, and the excessive cost-trimming which may have led to the BWR problems is not expected again.

Meanwhile, the federal government's nuclear policy continues to be threatened by opposition from the left wing of the Social Democratic Party, particularly in Hamburg where construction of the Broksdorf reactor has been brought to a halt by demonstrations. Over the weekend, 50,000 people demonstrated at Broksdorf, and 127 policemen were injured. According to some observers, many of the demonstrators were not local, but represented national left-Social Democratic, Communist and Green Party groups. Broksdorf thus appears to have become a symbol of left-right conflict in Germany. **Robert Walgate**

## Human growth hormone

### Pituitary slump

Britain's supply of pituitary glands, from which human growth hormone (HGH) is extracted to treat 600 British children who do not produce it normally, has fallen by at least a third in the past year — to a level too low to keep up with demand. This has happened since responsibility for HGH extraction shifted, in June last year, from two Medical Research Council-funded researchers to the Department of Health and Social Security (DHSS). Bureaucracy has strangled their collection procedure, Dr Philip Lowry, one of the researchers, said last week. The collection rate has now stabilized at around 42,000 glands a year, DHSS claims, accounting for almost all patients who end up in a National Health Service mortuary — but the supply from public mortuaries (where victims of violence and accident are given postmortem examinations) has almost dried up. In the last year of the Medical Research Council scheme, 70,000 pituitaries were collected, said Dr Lowry.

Extraction of the hormone is now done at the Centre for Applied Microbiological Research at Porton Down, which has become increasingly involved in health

service functions since it was transferred to the Public Health Laboratory Service from the Ministry of Defence two years ago. Of two processes, depending on the form in which pituitaries are collected, Porton chose the older, using acetone-dried glands. This yields around 8 clinical units of HGH per gland as opposed to 15 by the newer frozen-gland system (which has been adopted in New Zealand and Canada), but collection is easier: the extracted gland needs only to be popped into a bottle of acetone, instead of a container packed around with dry ice. However, says Dr Lowry, who developed the frozen-gland process, clinical trials over the past year have shown that the HGH produced from frozen glands is the more pure, provoking no immune reactions — unlike acetone-dried HGH, which often contains modified and agglomerated versions of the protein, and can be rejected by the child.

The 336,000 units of HGH made available by the Porton process each year in Britain are enough to supply only 430 of the 600 children with a full dose of 15 units a week. So far, Porton has been relying on an excess of material collected through the old system; but soon the reduced supply of glands must have an effect on the supply of HGH. It may then be necessary to buy HGH from foreign producers, where market pressures have pushed up the price to 50 times the cost of home-produced hormone. Porton is also working on producing HGH from *Escherichia coli*, genetically engineered to excrete the hormone, provided by the Swiss firm Kabi-Vitrum in association with the California-based genetic engineering company, Genentech; but production is not likely to be significant for a year, at least until clinical trials, now under way at Great Ormond Street Children's Hospital on Genentech-produced hormone, are complete. Moreover, the genetically-engineered hormone is slightly modified: it has an extra amino acid (methionine) tacked on one end, and there is a possibility that, like agglomerated HGH, it may provoke an immune response.

Meanwhile, the DHSS is trying desperately to restore supplies of pituitaries from public mortuaries. But the department is facing numerous legal and personal obstacles. Legally the coroner must consent, and the relatives give written permission. But a death involving a public post mortem is usually an unexpected one, relatives are shocked, and the case does not seem so compelling as for a kidney or a heart. The DHSS recently sent 200 letters and made as many telephone calls to coroners and pathologists requesting their urgent cooperation — but the department has little hope that the supply will rise much in consequence.

A few months ago, supply problems were even more desperate, when hospitals too were failing to provide the glands. This may have been because morticians, in March 1980, negotiated a new contract

In addition to the four boiling water reactors (producing 3,300 MW), Germany has another six power reactors producing 6,600 MW. Another nine, to produce around 10,000 MW, are under construction, including the SNR fast breeder research reactor, and a high temperature reactor near Cologne. Construction is halted at two further sites (Broksdorf and Wyhl because of local and political opposition).