

of the political spectrum.

The Administration has already agreed to support a federal contribution of \$123 million towards the almost \$1,000 million which it is estimated will be needed to clean up the Three Mile Island power plant. Private utilities have agreed to contribute a similar amount through the Edison Electric Institute, and the rest of the money comes from insurance cover and from the states of Pennsylvania and New Jersey.

The extra costs of new plants is not merely a result of licensing delays. As safety questions come under scrutiny, embarrassing facts are beginning to emerge. At the Diablo Canyon plant in California, for example, the wrong blueprint had been used to calculate potential stresses arising from an earthquake. And almost all of the operating nuclear plants across the country are likely to miss the deadline imposed by the Nuclear Regulatory Commission for replacing between 15 and 40 per cent of their electrical equipment which had previously been thought safe, but which was shown to be liable to failure under exposure to steam and radiation that might occur during an accident.

Such design errors have played into the hands of anti-nuclear protesters who claim that nuclear technology must remain under strict control and supervision. The industry claims that it is being strangled by these controls; but, especially at a local level the courts have tended to back up the critics.

These developments appear to foreclose all but the final NSOC option — that of increasing links with the military sector, perhaps through the recreation of the Atomic Energy Commission which shared responsibility for the military and civilian uses of nuclear fission until the early 1970s. Department of Energy officials, for example, are already claiming that their initial proposals to extract plutonium from commercial wastes through laser isotope separation (*Nature* 30 July, p.401) could partially solve the storage problem.

Here again, however, the political problems are likely to be enormous. Critics argue that allowing the military greater leverage over the civilian programme could threaten attempts to control nuclear technology through more democratic means, and that it would conflict with efforts to limit the proliferation of nuclear weapons in developing nations by trying to divorce the civilian and nuclear aspects of nuclear energy.

Nobody in Washington pretends that finding the solution will be easy. President Reagan has asked Energy Secretary James Edwards and the director of the Office of Science and Technology Policy, Dr George (Jay) Keyworth, to consult industry, the utilities and universities, and they have been given almost a year to prepare a report on "obstacles that stand in the way of increased use of nuclear energy and the steps needed to overcome them".

David Dickson

Human growth hormone Shortage persists

British supplies of human growth hormone are in danger. Over-optimism about the availability of the hormone from genetically engineered bacteria combined with a failure to appreciate that even mortuary workers are human has left the United Kingdom's National Health Service with supplies which are inadequate for the optimal treatment of the 800 British children with growth hormone deficiency.

Until biotechnology raised the prospect of an alternative, the only source of human growth hormone was the pituitary glands of cadavers. Three years ago at least 50,000 pituitary glands were collected from mortuaries in hospitals and processed in Cambridge. Another 20,000 pituitaries were collected from public mortuaries for processing in London. The combined operation, under the auspices of the

Medical Research Council, would have produced more than enough growth hormone for British needs so that up to half of the pituitaries from hospital mortuaries were stockpiled. Because of a drastic fall in the collection of pituitaries from hospitals, the stockpile is now depleted. Faced with a huge rise in cost of the hormone, the Department of Health and Social Security (DHSS) has now ordered a reduction in therapeutic dosage during 1982.

Trouble began when DHSS took over the collection and processing of pituitaries. Most of the hospital pituitaries were to be processed in the department's new Centre for Applied Microbiological Research at Porton Down. Material from public mortuaries, on the other hand, was to be handled by the Swedish company Kabi Vitrum, chosen because it has the European rights to manufacture and market human growth hormone from bacteria genetically-engineered by the Californian company Genentech. Bacterial growth hormone was to have been provided by Kabi Vitrum to DHSS at a preferential price as soon as British clinical trials, due to start in January 1981, had been successfully completed.

The first snag with these plans was that DHSS decided to use the changeover as an opportunity to consolidate into the wages of mortuary workers at hospitals, the small sum that had previously been paid to them for each pituitary collected. As many a manager might have told DHSS, consolidation can be a recipe for diminished productivity. The number collected from public mortuaries has fallen to about 13,000 a year despite the reinstatement of the special payments, but was never more than 20,000. The combined annual collection of pituitaries has therefore fallen by 60 per cent and now provides less than half the amount of hormone needed to treat British children.

The shortfall has been exacerbated by a delay in the production of bacterial human growth hormone. The first batch of Genentech's hormone to be given to humans had unacceptable side effects (fever and the lysis of blood monocytes) and full clinical trials had to be postponed. The side effects were almost certainly due to the presence of bacterial toxins in the hormone preparation, and both Genentech and Kabi Vitrum have now developed a more complex purification process. Genentech claims that its cleaner preparation has cleared toxicity tests and says that it is already six weeks into a clinical trial on children. Kabi Vitrum is slightly behind, having just completed a toxicity trial in Sweden.

Some, however, doubt whether the bacterially-derived human growth hormone will pass through its clinical trials successfully. The scepticism is based on the fact that the bacterial hormone is not quite identical with the authentic human hormone. Clever though Genentech's genetic engineers are, they have not been

Two heads for one

The Centre National de la Recherche Scientifique of France now has its complement of two heads, a director-general and a president, just two weeks after the previous incumbents resigned on a matter of principle. First — as reported last week — the mathematician Jean-Jacques Payan has been appointed director-general; and now M. Claude Frejaques, present director of the Délégation Générale à la Recherche Scientifique et Technique (DGRST) has been appointed president.

The appointments may be interim ones, as the Minister of State for Science and Technology, M. Jean-Pierre Chevènement, is said to prefer a single director for CNRS, rather than the dual headship established by the previous administration. But there was no time to change the constitution before the national colloquium, due in January, where major policy issues will be thrashed out in public, and CNRS — as the major supporter of basic research in France — has to have a clear voice by then.

Nevertheless, the appointment of Frejaques, a career civil servant rather than a scientist, has its rationale. DGRST was effectively the administration of the previous — and less powerful — science minister, Pierre Aigrain, and Chevènement has begun to set up almost a rival administration in his new ministry. DGRST may in the end be disbanded in all but name, with its parts becoming wings of the research ministry. Chevènement already has a chef du cabinet, so some role had to be found for Frejaques. CNRS seemed to suit — now leaving the minister free to shuffle DGRST as he wishes.

Robert Walgate

able to devise a way for their bacteria to produce growth hormone without an extra methionine at one end of the molecule. This amino acid, say some hormone biochemists such as Dr Philip Lowry of St Bartholomew's Hospital, is a prime target for recognition by antibodies. He therefore predicts that when used in long-term therapy, bacterially-derived human growth hormone will provoke an antibody response that will preclude its clinical use.

It is too soon to know whether Dr Lowry's predictions are right. If not, Kabi Vitrum bacterial growth hormone should be available to plug the gap in Britain's traditional supplies before dosage has to be too seriously reduced. The reduction already planned is considered not to be disastrous; one expert reckons that at worst the children so treated would end up no more than three centimetres short of their maximal height.

Because there is a world shortage of the hormone there is little hope that DHSS will find alternative supplies. And even if it could, the cost would probably be prohibitive. One estimate is that 3 years ago, the cost was £1.25 per 5-unit ampoule whereas an equivalent ampoule purchased by DHSS from Kabi Vitrum now costs £15.

Peter Newmark

UK medical research

To those that hath . . .

British university departments asking the Medical Research Council (MRC) for research grants will now need an assurance of financial support from their universities. MRC's chief concern is that universities, in adjusting to their own reduced budgets, may starve individual departments of funds, with the result that its research grants are "rendered ineffective".

In a letter to universities this month, the council reaffirms its belief in the dual support system, under which British university departments winning grants from research councils are supposed to be maintained as "well-found laboratories" out of the general subvention from the University Grants Committee. It acknowledges, however, that there may be temporary difficulties, as when universities decide to freeze vacant posts.

The move is MRC's attempt to force the universities' hands. Like the Science and Engineering Research Council, it is concerned that the quality of university research will be irreparably damaged if universities spread their dwindling resources too thinly. Hence it will support the objective of the University Grants Committee (UGC) that universities should concentrate their own resources on good departments considered worthy of support. Applicants for new grants from institutions not favoured by UGC may be in for a raw deal.

The MRC, nevertheless, offers some help to universities. Researchers who lose

their jobs, for example, will be eligible for small personal grants, which, while not paying their salaries, will help them complete projects already started. Universities are also invited to nominate exceptionally promising researchers who may be eligible for help. MRC is willing to expand its senior fellowship scheme which provides support for up to ten years for promising young researchers unable to find tenured posts. Demand for the scheme, which has been running for four years, is already heavier this year than in the past. MRC is also willing to increase the number of awards it makes under existing schemes which free academics from teaching and administrative tasks to allow them to spend a few years on full-time research.

The release of the MRC letter to the universities last week coincided with publication of its annual report for the year ending March 1981 (HMSO £4.00). According to the report, the council has resolved its long-standing dispute over the terms of employment of researchers on short-term contracts. The council has agreed that 70–80 per cent of its posts will carry tenure, compared with 67 per cent previously. Short-term appointments will now be almost exclusively for three years and open competition will be invited for tenured positions. The new scheme will not cost the council more, according to Dr James Gowans, Secretary of MRC, chiefly because it does away with appointments of intermediate term.

During 1980–81, the council spent nearly £93 million, about £15 million of which was transferred to its budget from the Department of Health after the collapse of the Rothschild customer-contractor principle. Under the principle, first introduced in 1974, money was transferred from the council's annual budget to government departments for spending on research commissioned through the council. The new policy, however, has made little difference to the council's work, according to Dr Gowans, because the health department chose to commission long-term research which the council will continue to support. In the deal struck with the health department, the council has agreed to increase support for health service research to £2 million by 1985–86.

The year to March 1981 was not easy — the council had to supplement its government grant with £500,000 of its own money and was not able to provide all the support for top quality research for which it was asked. But Dr. Gowans's chief concern is for the future. In particular, he fears that the government may renege on its earlier promise to maintain the real value of the science vote to be announced in December. The implications of a real budget cut for MRC, which in any one year has more than 90 per cent of its budget tied up in on-going commitments, could be far-reaching, involving a reduction in the amount of research it supports in universities.

Judy Redfearn

European Science Foundation

Signs of solidity

Strasbourg

The European Science Foundation (ESF) — Europe's fledgling international academy — appears to have come of age. Last week the foundation, representing 47 research councils in 18 countries, made its first direct approach to governments with a letter to research ministers requesting them to take up the idea of a "European Synchrotron Radiation Source", a £30 million third-generation source of X-rays for Europe.

The new source is considered necessary by most European X-ray users if Europe is to keep abreast of American competence in the field. But the foundation's request is significant not only for its content but as an example of the foundation's new confidence in the practical role it can play in Europe.

The foundation has previously been cautious of its role *vis à vis* its member research councils, but there seems to be such agreement among the various councils over the synchrotron source, such a need to cooperate financially in the present recession and such growing confidence in the foundation's offices that the members are willing to let the corporate ESF approach go ahead.

Professor Hubert Curien, the French president of the foundation, makes it clear in his letter to the ministers that ESF — as a non-governmental organization — cannot handle political questions such as the site for the source or the national contributions to its cost, but requests governments to set up a committee of representatives to do just that. The governmental committee would then work at arm's length from the foundation, "seeded", as it were, by the foundation's earlier enthusiasm, hard work and the now-detailed specification of the X-ray machine.

How governments will respond is yet to be seen, but already several countries and organizations have made unofficial offers of sites, the most detailed of which has come from Italy (for Trieste). The ESF committee has also made a careful study of the possible use of a tunnel at the European Centre for Nuclear Physics (CERN) near Geneva, which now holds the intersecting storage rings, a ten-year-old device likely to be closed within a few years to save money for the large electron-positron collider (LEP). If the new X-ray source were built at CERN it would, however, come outside the CERN budget.

According to the foundation's optimum timetable, the intergovernmental committee would meet early in 1982; governments would take a decision in principle in early 1983; and the source would be in operation by 1988–89.

The foundation also agreed last week — at its annual assembly in Strasbourg — on a serious study of what may be its next big project — a "geotraverse" of Europe. This