Anglo-German project

Aurora held up

Red tape has already delayed the British half of an Anglo-German programme of auroral investigations for several months. Last week, one of the obstacles — agreement on the wording of a lease for land at a site in the north of Scotland — was surmounted. But a further six months delay is now likely, pending the installation of an electricity supply to the site.

The joint programme, known as SABRE, is for radar backscatter observations of the aurora from two sites — near Wick in Scotland and at Uppsala in Sweden. The two collaborating groups are led by Professor Tudor Jones at the University of Leicester and Professor I. Axford at the Max Planck Institut für Aeronomie, Lindau. The British Science Research Council and the Max Planck Institut are supporting the experiments to the tune of about £200,000 each.

The programme is designed to complement a similar twin auroral radar, called STARE, operated from two sites in northern Scandinavia by the Lindau group. Observations from the Swedish site began last January, but delays in preparing the Scottish site have meant that spatially and temporally resolved observations have not yet been possible.

The Scottish site is one of four sites originally owned by the Ministry of Defence but now controlled by the Property Services Agency which deals with matters relating to public land. Most of the hold-up seems attributable to delays in reaching agreement on improving accommodation and connecting an electricity supply. The agency, which plans to sell the other three sites, has been concerned that the electricity supplies of each should be independent. At present, the supply to the site which the University of Leicester wants to lease is routed via a transformer situated elsewhere. Four options for installing a new supply, presented by the North of Scotland Hydroelectric Board, have been turned down as too costly.

Some blame the delays on the snail's pace at which the Property Services Agency works. After 18 months of turning the bureaucratic handle, an acceptable draft lease finally arrived at the University of Leicester only last week. But the problem of installing a new electricity supply remains. A mains cable supplying the site was apparently damaged a few years ago when a new road was built. Repairs involve laying new cables. The North of Scotland Hydroelectric Board estimates that the job could take six months and cost about £5,000. The agency has now handed over responsibility to the university.

If work cannot be speeded up, a temporary generator will have to be installed if experiments are to begin before winter.

Judy Redfearn

US nuclear power

Cost disputed*Washington*

Efforts to meet the safety problems created by nuclear power have already made nuclear energy considerably more expensive than electricity from modern coal-fired plants, even with the sophisticated anti-pollution equipment needed in coal-fired stations. And the gap is likely to increase at least until the end of the decade according to a report published in New York last week by an independent energy economist, Charles Komanoff.

The nuclear industry has reacted sceptically to Komanoff's prediction, claiming that he underestimates the productivity of nuclear power, and overestimates the productivity of coal generation. The Atomic Industry Forum, chief spokesman for the nuclear industry, issued a statement saying that the conclusions clash with those of other economists, and that "to predict cost trends for coal and nuclear in a period of fuel-price volatility and still-uncontrolled inflation seems highly dubious."

However, Komanoff, who last year gave evidence on nuclear power costs to the UK House of Commons Select Committee on Energy, is standing by his figures. He points out that similar scepticism greeted a prediction he made five years ago that the nuclear industry would be operating at only 55 per cent of capacity through to the end of the 1970s, a figure which has turned out close to the truth.

He also claims that the argument about coal being cheaper than nuclear power appears to be supported by figures published by the Atomic Industry Forum itself. In a report issued two months ago, the industry group estimated that electricity from the three nuclear plants which started operation in 1978 cost 2.5 cents per kilowatt hour to produce, compared with 2.0 cents for coal and 5.7 cents for oil.

Komanoff maintains that the more nuclear power has expanded, the more generic problems it has revealed, and the greater the effort required to prevent the number of nuclear incidents from increasing at the same rate. He says this is substantiated by the steady increase in the number of warnings of potential generic problems by the Nuclear Regulatory Commission during the past decade.

Komanoff bases his future projections on the cost of obtaining electricity from coal-fired plants by assuming that increasingly stringent controls will require the use of scrubbers to remove sulphur dioxide — devices that can consume up to 25 per cent of the capital costs of a new plant — and that the cost of coal will increase at a rate about 2 per cent more than the inflation rate. On this basis a coal plant will increase in capital cost from \$583 to \$794 per kilowatt hour of generating capacity in "constant" dollars. In

contrast, extrapolating on past trends in the rising costs of nuclear power plants due to the need to include increasingly stringent safety precautions, Komanoff predicts that the cost will rise from \$887 to \$1,374 per kilowatt hour of capacity.

The Atomic Industry Forum is looking closely at Komanoff's figures. Its own analysis, based on power plants coming into operation between 1970 and 1978, is that "nuclear electricity in 1979 continued to show a modest advantage in total generating cost compared with neighbouring coal units", and that nuclear power also compared favourably with coal in capacity factor. At the same time, the industry group admits that regulatory delays and public intervention in licensing procedures "run up nuclear costs significantly"; it claims that there are approximately one dozen nuclear plants currently snarled up in bureaucratic delays which will cost US consumers as much as \$3,000 million in higher utility bills.

Whichever analysis of the relative costs of nuclear and coal is correct, however, both sides agree that immediate prospects for the US nuclear industry are bleak. Only 13 new nuclear-power plants have been ordered in the United States since 1975, and plans for 50 plants have been cancelled — many because of decreasing predictions of future energy needs.

On top of this, no new plants have been ordered in the past two years. The nuclear industry is hoping that President Reagan will make good his election promises of increased support, and is already providing him with suggestions as to how this might be achieved, from revamping some of the safety regulations which Komanoff claims to be at the root of the cost escalation, to proposals for federal financial aid for nuclear-plant construction.

Overhauling the regulatory apparatus, however, will not be easy. Only one of the five seats on the Nuclear Regulatory Commission is vacant, and two of the existing commissioners have been harsh critics of some of the industry's demands. In addition, Mr Reagan's rumoured choice for the chairmanship of the commission, former head of naval operations Admiral James L. Holloway, is reported to have turned down the offer, and with no clear indication of the direction in which it is meant to be moving, the commission is running at half speed.

David Dickson

Anti-viral drugs

Herpes on trial

Volunteers, 50 male and 50 female, with genital herpes simplex infections are being sought by the Infectious Diseases Unit at the University of Texas Health Science Center at Dallas to take part in clinical trials of the promising antiviral drug acyclovir (acycloguanosine). There is as yet no effective treatment for genital herpes, which is sexually transmitted and now

considered to be of epidemic proportions in the United States, where 300,000 new cases are reported each year. Each new patient becomes a carrier for life. Acyclovir has generated great enthusiasm at Burroughs Wellcome, its developers, as a real advance in treating the disease. One worry, though, is that viruses may acquire resistance.

Herpes simplex virus (HSV) can infect any part of the skin or mucous membrane. HSV Type 1 cause the familiar "cold sore" blisters on the lip. Genital herpes, caused by HSV Type 2, is a more severe condition and causes painful blisters in the genital area. In the Dallas trial the drug will be applied as an ointment over skin areas where patients feel a tingling, burning or itching sensation (a "prodrome") suggesting that a blister is about to develop. Acyclovir will be compared with placebo cream containing no active agent. If the drug succeeds in reducing the period of recurrences to one or two days, it should not only reduce the period of pain for the patient, but also reduce the capacity for passing on the disease to others.

Because viruses are parasites of the normal systems of the cell they infect, antiviral drugs tend also to act against the host cell. There are few points at which the life processes of the virus can be properly differentiated from those of the host, but acyclovir acts specifically against herpesvirus through one such reaction (*Nature* 272, 583; 1978). It is phosphorylated by the herpes-specified enzyme thymidine kinase, so that the active triphosphate derivative is present in much greater quantities in infected than in uninfected cells. In a sense, the virus thereby invites its own destruction. It remains to be seen whether acyclovir will prove active against even the dormant form of the virus. Herpes infection is characterized by the way in which all outward evidence of the infection can disappear, but the virus persists undetected in certain nerve cells.

Acyclovir is being used as an ointment in the Dallas study, but later tests will include systemic (for example intravenous) injections which could increase the range of infections against which the drug can be used. Already acyclovir has proved active as an eye ointment against herpes simplex corneal ulcers, and less conclusively against viral pneumonia.

The US National Institutes of Health are to fund trials of intravenous acyclovir in newborn babies with neonatal herpes, in comparison with adenosine arabinoside (vidarabine), and in cases of herpes encephalitis, in comparison with the adenoside of adenosine monophosphate. Neonatal herpes is a herpes simplex infection contracted from the infected mother during passage through the birth canal — if the virus reaches the brain it can cause death. Herpes encephalitis is caused by reactivation of the virus in the brain.

Charles Wenz

European Earth sciences

Unity prevails

Strasbourg

Europe's Earth scientists may yet unite. A meeting on 13–16 April at the assembly of the Council of Europe saw the first public appearance of the European Union of Geosciences (EUG). At present, EUG consists of a founding committee and has the official status of a working party of the Parliamentary Assembly of the Council of Europe. Its aim is to provide an organization which encourages the exchange of ideas and information across the more traditional subject barriers that separate geologists from the geochemists, geophysicists and oceanographers. To that end, membership is open to any geoscientist, but officials of EUG are to be nationals of the member countries of the Council of Europe.

At present, EUG is run by a founding committee under Professor C. J. Allègre of the University of Paris, and its formal statutes are to remain provisional until approved at a future meeting. EUG intends to hold a regular meeting in the spring in Strasbourg every other year; its interdisciplinary scope is to be complemented by more specific topical conferences to be held between the more general meetings. The concept and format of EUG owe a lot to the success of the American Geophysical Union and its big annual spring and fall meetings, which have almost become a must for many European researchers. However, the scope is to be wider insofar as it is to encompass all Earth scientists, not only those in the geophysical community. In this way, it hopes to avoid rivalries and misunderstandings with the European Geophysical Society, which caters for the same scientific community as the American Geophysical Union.

Although the European Science Foundation (ESF) did not play a major part in the organization of the Strasbourg meeting, it appears that ESF is prepared to help set up and support a small permanent office for EUG in Strasbourg. Is this the beginning of ESF taking a more active interest in the Earth sciences, an area hitherto neglected by its working parties?

The European Parliament building was made available by the Council of Europe for this first EUG meeting. Although organized at relatively short notice, it nevertheless managed to attract more than 600 participants and enough presentations to run a full four-day programme grouped in 16 different sessions.

The abstracts from the first meeting appeared as the first issue of an ambitious new publication called *Terra Cognita*. EUG hopes to develop this into a quarterly journal which should serve as a forum for scientific information on research projects and activities as well as to promote the discussion and exchange of ideas within the Earth sciences community. Konrad Guettler

Out on a limb

Brussels

Dutch Socialist Member of the European Parliament, Annie Krouwel-Vlam, is trying to whip up support for a European Community directive on common rules for organ transplants. She is surprised that there are no rules regulating relations between organ banks and facilitating access for would-be recipients of new parts. Such measures would implant a greater awareness of the benefits of the European Community in the breasts of its citizens, she asserted.

Her suggestion has been passed to the Community's organ banks and the European Commission. So international banking could soon take on a new meaning.

Jasper Becker

Interferon business

Trials ahead

Rotterdam

That interferon is big business can only have escaped the notice of those totally occupied for the past two years in preventing the pollution of space by small plastic tiles. That it continues to be big business was evident from the number of companies represented last week (19–24 April) at the interferon meeting organized by TNO, the Netherlands organization for applied scientific research.

Half of the British participants were from Beechams, Celltech, Fisons, ICI, G.D. Searle and Wellcome, with about the same proportion of commercial people among the West Germans. The large United States contingent included representatives of Cetus, Du Pont, Enzo Biochem, Electro Nucleonics, Genentech, Hoffman LaRoche, Hydron, Meloy, Sepetex, Schering and Shell. Not a slide went unphotographed nor a talk unrecorded by one or more commercially interested party.

Many of these companies already had a declared interest in interferon but some were new to the game. ICI let it be known that it has cloned an interferon gene from lymphoblastoid cells in collaboration with Dr E. de Maeyer's group at the Institut Curie in Orsay. ICI says that this is just an exercise in cloning, but with the setback in the fortunes of the company earlier in the year (*Nature* 12 March), there must be thoughts of trying to cash in on clones.

There is little doubt that the demand for highly purified interferon is growing, but the growth can be fitful. Wellcome, for example, recently claimed that supply had outstripped demand for its alpha-interferon (from white blood cells). That situation could easily be reversed if the current clinical trials of Wellcome's interferon show promise. The interim results, reported in Rotterdam, of several relatively large trials of a variety of different alpha-