

of major components, such as the reactor vessel and circulation pumps. Under the current terms of the act, the US would have control over any fuel once it had been irradiated using such components.

But opposition to a change in policy is firmly entrenched, particularly from those convinced of President Carter's correctness in opposing any measures that would increase the spread of plutonium. "The choice between us is not between 'leverage' and 'consensus', rather it is between sticking to our principles and abandoning them" says Dr Tom Cochran, senior staff scientist with the Natural Resources Defense Council.

Given the apparent depth of the President's previous commitment to this position, no substantial change of policy is expected, at least until after the forthcoming elections. But there are several hurdles to be met before then, in particular the Nuclear Non-Proliferation Treaty review conference which takes place in Geneva in August.

Faced with inevitable criticism for failing to secure progress towards an arms limitation agreement with the Soviet Union, the US is hoping to reply by pointing to its efforts in support of INFCE's warnings about the proliferation dangers inherent in reprocessing and fast breeders — and to the steps it is taking to enhance its image as a reliable nuclear supplier to states which sign the NPT.

But it is a long shot. US officials admit that they are faced with a no-win situation at the review conference, and that their prime tactic is likely to be 'damage limitation' rather than anything more ambitious.

David Dickson

## Electric vehicles

### Top speed at Lords

What will the House of Lords make of the electric car, the topic on which the Select Committee on Science and Technology appointed in January (*Nature* 20 March, page 199) chose to cut its teeth? Nobody is yet sure. But anxious, no doubt,

to fulfil its promise that the inquiry should be short and sharp, the committee has now finished taking evidence and plans to publish its report in July. Electric vehicles are in the same class as saints used to be: everybody approves provided they work. The perennial problem is whether the energy density of the batteries that drive electric vehicles can be increased substantially above that of the lead-acid battery, rated at 150 kilo-Joules  $\text{kg}^{-1}$  at full charge.

The committee has heard from the chief British battery makers, Chloride and Lucas, that the brightest prospects for increasing energy densities by a factor of between three and four lie with the sodium-sulphur battery. Unfortunately though, vehicle operators would have to put up with the inconvenience of batteries working at 350°C. So nickel-zinc batteries now seem to be the gleam in manufacturers' eyes.

Several witnesses have told the House of Lords that Britain spends little on electric vehicle research compared with the United States and Japan. About £20 million has been spent since the late 1960s, about 75% of which has been put up by private industry. The US, by contrast, has a seven-year \$200 million programme which began in 1976. Yet Britain has the largest fleet of electric vehicles — 45,000 of them, mostly used for delivering milk.

The prospects for further and rapid growth of the electric vehicle fleet in the UK are not however bright. Chloride/Talbot and Lucas/Vauxhall have built small fleets of delivery vans (top speed 50 miles per hour and range 50 to 70 miles), which are now operating in several cities. They hope to achieve commercial production in the mid-1980s.

But the manufacturers are cool about the prospects for the all-electric private car. The most promising way of increasing speed and range is by means of the hybrid vehicle running on part petrol, part battery. US manufacturers seem to be much keener on this development than their UK counterparts who are deterred by the problems of incorporating two different systems within one vehicle. A

hybrid idea which has, however, been greeted enthusiastically in the UK is the hybrid trolley-bus, which runs partly from an overhead power supply and partly on batteries.

Potential operators, the House of Lords has heard, will have little to choose between electric and conventional vehicles in terms of the efficient use of primary fuel. Operating costs will, of course, depend on the relative prices of electricity and oil. But the efficiency of the electric vehicle in terms of the load it can carry can be considerably lower than that of the conventional van because of the great weight of its batteries.

Perhaps the most important question House of Lords committee members have had at the backs of their minds is whether the level of funding in the UK is sufficient, given the current state of knowledge. The Electric Vehicle Development Group, which exists to support and advise manufacturers interested in electric vehicles, told the committee that while the level of fundamental research on battery technology is respectable, it is not matched by a comparable effort in research on motor design, control and body design. Others, however, considered that the balance is about right.

Whether further support is necessary and, if so, whether it should come from government or private forces will no doubt figure in the final report. The Department of Industry, which has put up most of the government money, points out that in allocating its resource it has to balance the potential advantages of spending more on electric vehicles research with spending more on improving the efficiency of the internal combustion engine. It is currently reviewing its priorities.

Judy Redfearn

## Thalassaemia

### Saudi-London plan

Saudi Arabia has signed a contract worth £1 million over 3 years for joint research on thalassaemia — a crippling genetic blood disease affecting malaria-belt countries. The contract is between two London medical schools — University College Hospital Department of Obstetrics and St Mary's Hospital Medical School Department of Biochemistry — and King Abdul Aziz University, Jeddah.

Negotiations began in 1976 — when the then Saudi Ambassador in Denmark, Sheikh Faisal al-Hegelan, took his 14-year-old thalassaemic son Khaled for treatment at UCH. Khaled was treated by Dr Bernadette Modell, and his parents wanted to know everything about his treatment. (It involved intensive blood transfusions with nightly injections of desferrioxamine to remove excess iron.)

Dr Modell — who has worked mostly with the Cypriot community in London — explained that support for clinical and fundamental research into the disease was lacking in Britain, where it is an uncommon

