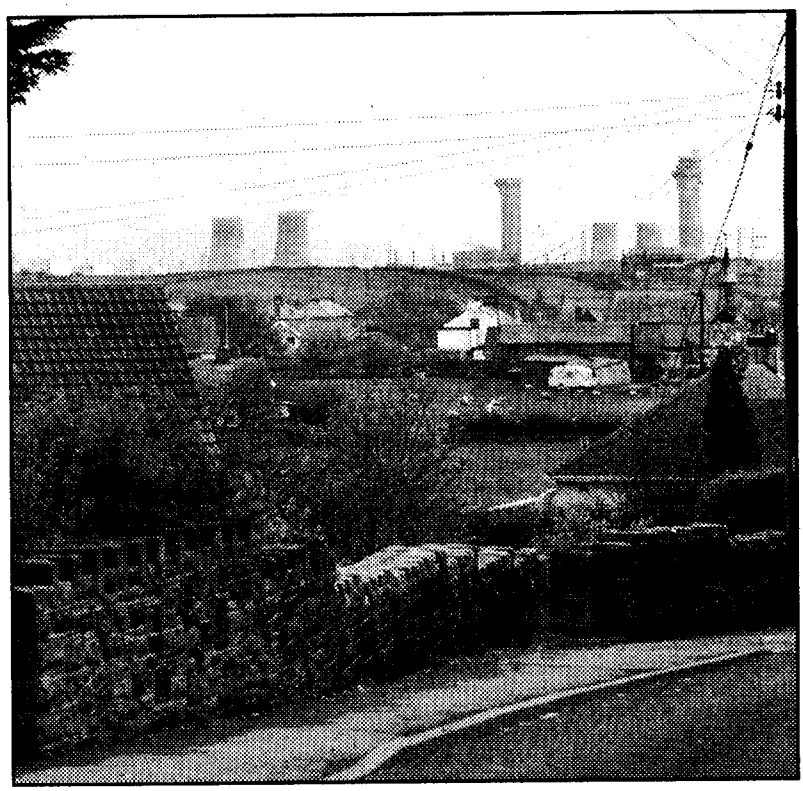
Fresh chapter in nuclear waste row

Scientists oppose a radioactive dump at Sellafield. **Gavin Bell** investigates



Site for sore eyes: Sellafield is mooted as a nuclear burial ground.

MESSY stuff, nuclear waste. Not the kind of thing you can pop into local recycling bins for conversion into green bottles. More likely to end up with a lot of green people in the neighbourhood.

So what do we do with it? Witness the convoluted twists and turns in the interminable saga of the industry's attempts to get rid of its radioactive waste at Sellafield. The latest charge that developing a nuclear dump at the Cumbrian site could cost as much as the Channel Tunnel has been vigorously denied by UK Nirex, the waste disposal company. Nonsense, it says, it is planning to spend a mere £238m on investigating the suitability of the site, only about a tenth of the costs of constructing and fitting out the Channel Tunnel.

Irrespective of how much it is going to cost, however, there is a body of scientific opinion that they are looking in the wrong place. The best place in Britain to dispose of nuclear rubbish is not Sellafield, according to this view, nor is it anywhere near Dounreay for that matter.

By far the safest, most secure, and geologically-sound site is East Anglia, the flat rump of England between the Wash and the Thames estuary. The problem there is not the nature of the rock, but rather the people who live on it — it is largely the fiefdom of Conservative farmers and rural folk and the constituency of John Gummer, the Environment Secretary. So under the present Government, the argument goes, it is unlikely to be considered.

So says David Smythe, a professor of geophysics at Glasgow University, who served until 1991 on a BNFL review panel which assessed possible repository sites. He insists the geology around Sellafield is too complex for the purpose, and no amount of investigations will change that. It is time to look somewhere else.

The ideal burial ground for low-level and intermediate nuclear waste, such as contaminated clothing and building materials, is salt. "A salt bed is perfect because it absorbs water and flows like a viscous fluid, so it would gradually close up around any leak in the repository and effectively seal it." The problem is that large salt deposits in Britain were mined out years ago.

The United States is pressing ahead with plans to dig a nuclear dump in a salt bed under New Mexico, having received assurances the barrels of solid waste would be safely isolated for at least 10,000 years. Professor Smythe would like for us to pay the Americans to take our stuff, but there is a growing international consensus that countries should dispose of their own waste.

Sc the next best thing would be East Anglia, because it conforms to an ideal textbook model known as BUSC. This stands for basement under sedimentary cover, which refers to hard crystalline rock covered with layers of sandstone, limestone, and shale.

"What we have there is granitic-type rocks in a geologically-simple environment," Professor Smythe says. "It is flat, so any water at depth is not going anywhere, which means there is less danger of it spreading contamination. Also, there are no mountains or other large variations of geology nearby, so there are no gradients for water to build up momentum. It is the nearest we have to the ideal model, there is nothing nearly as good anywhere else in Britain that I am aware of."

THE difficulty with the area, he suggests, may be political rather than scientific, which is why he and a colleague at Glasgow University wish to open up the debate with the publication this week of a book presenting the case against Sellafield.

Whether UK Nirex has considered East Anglia is anybody's guess. It began its studies with 500 possible sites, which it gradually whittled down to a dozen but, with the exception of Sellafield, it has not identified them. A spokeswoman for the company said yesterday this had not been deemed in the public interest.

"We are uneasy about the secrecy surrounding this," says Professor Smythe. "Decisions are being taken supposedly on the basis of science, but we suspect they are politically motivated. We want to open up the process."

UK Nirex argues that it has divulged all that it can be reasonably expected to at public inquiries. Now it wants to get ahead with constructing an underground rock laboratory at a farm near the nuclear plant, to probe deeper into the area's geology and hydrogeology.

There are other possible solutions, but they involve high degrees of risk. Says Professor Smythe: "We could shoot the stuff into space of course, that would really be getting rid of it, but look at the Challenger disaster. An accident on take-off would be too horrible to contemplate, it could contaminate the planet."

The burial-at-sea option is an "out of sight, out of mind cop-out", he says. "Putting it in barrels set in concrete beneath the sea-bed 6000 metres down doesn't mean it's gone forever. In the absence of on-shore salt pans, our only real solution is controlled disposal in solid rock."

Which brings us back to the rump of England. The issue will be debated thoroughly this week at the annual meeting of UK Nirex and a Government watchdog body, the Radioactive Waste Management Advisory Committee. Professor Smythe would like to think that somebody might suggest looking at East Anglia, but he doubts it.