

the country from London, the county is already home to the Sellafield nuclear site that once produced plutonium for the nation's nuclear weapons. Sellafield still houses most of the country's nuclear waste, and so to build a repository nearby would be sensible, as long as the conditions are suitable.

The government has looked at Sellafield once before. In the 1980s, an independent group was set up to try to locate a geologically suitable waste dump in Britain. The body eventually settled on Sellafield, and set out to build a £200-million (US\$315-million) 'rock characterization facility' at the site. In 1997, the proposal was abandoned after local planners rejected it — in part, because of fears that the facility might become a de facto waste dump.

This time, the government vowed to do things differently. The old executive was abolished and in its place new plans were laid out that promised transparency, democratic inclusivity and scientific scrutiny. The plans mirror those of nations such as Finland and Sweden, which are successfully building waste repositories.

So why has the process come up empty again? The answer is a lack of political will at almost every level of government. Critics say that the Nuclear Decommissioning Authority, the body responsible for the repository, never did much to try to sell the facility to local residents or to address their concerns about what it might do to property prices or tourism. At a national level, politicians offered only the vaguest promise of 'economic development' in exchange for taking the waste. Meanwhile, local politicians advocated an alternative plan: to build more short-term storage at Sellafield, thereby creating jobs in the near-term without making long-term commitments.

The United Kingdom is not alone in its nuclear torpor. In the United States, efforts to build a repository are in the doldrums following a decision to withdraw from a proposed site at Yucca Mountain in Nevada. A panel has recommended a site-selection exercise similar to the one carried out in the United Kingdom, but there is little reason

to believe that it could do any better. The very act of looking at places other than Yucca Mountain will require a change to legislation — unlikely given the nation's current political paralysis.

In the meantime, the bills from neglecting the waste are piling up. The US Nuclear Regulatory Commission faces a costly lawsuit from states and utility companies seeking to have their nuclear waste taken away, as required by federal law. In the United Kingdom, the endless

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clean-up of Sellafield drags on; it has cost more than £67.5 billion so far, according to a report released this week by a parliamentary committee. At the Fukushima Daiichi nuclear plant in Japan, spent fuel stored above ground at reactors is likely to have been a major source of contamination following the earthquake and tsunami in 2011. At the last count, the clean-up there is expected to

cost trillions of yen, or hundreds of billions of dollars.

The bleak situation might encourage some on both sides of the Atlantic to search for a quick fix. Already, there is talk in the United Kingdom of officials trying to bypass Cumbria County Council by going directly to the local communities of Allerdale and Copeland, which supported the survey work. In the United States, some in industry would like to see the plans for a repository at Yucca Mountain revised, despite Nevada's promise to fight it tooth and nail. Advocates of these solutions may feel that they are in the right, but they are guilty of political myopia: although it might be possible to nudge the projects forward briefly, they would quickly become bogged down again in a mire of legal and civil challenges.

It seems likely that both nations must start again. Scientists can help by reminding politicians that there are moral, financial and environmental reasons to make deep geological disposal work. Given the enormous costs of inaction, it is in everyone's interest to keep trying. ■

## Body of evidence

*The identification of a long-dead king is not simply an academic event.*

Headline writers and bloggers dusted off their copies of *The Complete Works of William Shakespeare* this week to gleefully report the identification of the skeleton of King Richard III, found beneath a car park in the English midlands. The fascination with Richard, the last king of the Plantagenet line and the last English monarch to fall in battle, goes beyond the known facts of the historical record; Richard is known as much as the misshapen villain of Shakespeare's play as the man who ruled until his violent death in 1485.

The king's mortal remains were identified by a mixture of science and history. The skeleton was male and about the right age, and radiocarbon dating suggests that he died around the end of the fifteenth century. Death was due to a forceful blow to the back of the head with a sharp blade, consistent with a sword or a fearsome medieval weapon called a halberd. He ate a high-protein diet containing plenty of seafood, so was clearly of high status. The spine was twisted, a sign of adolescent scoliosis, providing some basis for Shakespeare's deformed monster. The corpse was mutilated after death. It was found in the right place. And analysis of mitochondrial DNA from the bones matched samples taken from two descendants of Richard's family — the Canadian-born furniture maker Michael Ibsen and a second royal relative who chose to remain anonymous.

If that person chose to conceal their identity to avoid a media fuss, then they certainly made the right decision. The unveiling of the findings by researchers at the University of Leicester, UK, who found and

investigated the remains, at a press conference on Monday morning, led news bulletins and was immediately scrutinized and argued about online. Prominent historians scoffed at the media scrum and dismissed the academic significance of the find. Others accused them of jealousy and snobbery — would a similar discovery announced with equal fanfare by the University of Cambridge or Oxford face such hostility, they questioned?

Even some of those who praised the work could not resist bestowing a patronizing pat on the head, and pointed out that little old Leicester was enjoying its day in the Sun. (They may or may not have heard of DNA fingerprinting, which was developed by Alec Jeffreys in the same department of genetics that investigated the car-park skeleton.)

Certainly, the way the discovery was announced, the introduction of DNA evidence without the backing of a peer-reviewed paper, and the fact that there was a television documentary primed and ready to go will leave a sour taste in the mouth of some purists. The University of Leicester has managed to unite the two cultures of science and humanities in a way that few have before. “Science by press release” cried some scientists. “History by press conference” complained some historians.

They should get out more. The discovery of a 500-year-old slain King of England is an event that goes beyond the boundaries and the conventional audience of academia. The DNA evidence may be impossible for outsiders to verify until a paper is published, but molecular sleuthing alone will never be able to confirm the identity of the bones with total assurance anyway. And, given the strength of the other evidence, it does not need to. “There are lots of us out here

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who've been intrigued by and researching this for years and years,” one historian responded to an online critic. “This is really exciting for me — it's kind of the 15th century's Higgs Boson [sic] moment.” Let them enjoy it. ■