Burying the Report Is Easier

More than a year ago a team of eight consultants from the nuclear industry told the British Department of the Environment that the best way to handle spent fuel from nuclear reactors is to store it on site for a century or so before burying it. But the government has decided to store the report instead—ignoring the advice of its own panel.

Storage and disposal, the experts say, "is environmentally cleaner than the reprocessing route." Furthermore, "There are no serious doubts on the feasibility of direct disposal of fuel [after long-term storage]." The big advantage of storage, says the report, is that it buys time for the selection of disposal sites and the construction of facilities.

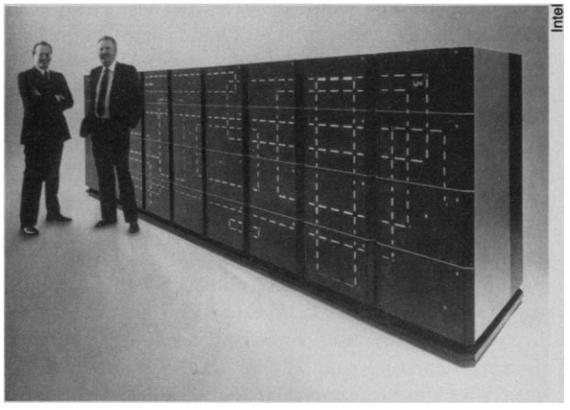
The experts' conclusions are reportedly bolstered by the 11th annual report of the government's Radioactive Waste Management Committee, due next week, which is said to conclude that there are no good reasons to reprocess spent fuel from advanced gas-cooled reactors. But the government continues to favor immediate reprocessing at the Sellafield plant operated by British Nuclear Fuels Ltd.

That could make nuclear electricity more expensive than it already is: Scottish Nuclear, the state-owned utility that runs two nuclear plants in Scotland, says that reprocessing will cost at least twice as much as long-term on-site storage.

World's Fastest Computer

No longer content to limp along at only one to two billion calculations per second—the typical speed of today's fastest supercomputers—researchers from 14 institutions have formed a consortium to build the fastest and most powerful computational engine on the planet: a machine that should do 5 to 15 billion calculations per second on the average and 32 billion per second on the straightaway.

The new machine is called Touchstone Delta, and is being built by the Intel Corporation based on an existing supercomputer design. It will achieve its power in two ways: by harnessing 528 individual processors to work in parallel, and by incorporating "mesh-routing" chips developed at Caltech to help the processors communicate with one another. If all goes as planned, it should be up and running at Intel by January 1991. It will be installed at Caltech by the following April, ready to tackle such problems as better modeling of global climate change, processing data from the Magellan and Galileo spacecraft, recognizing DNA patterns within the human genome, and searching for radio signals from binary pulsars.



Headquartered at Caltech, the consortium includes Intel, NASA, NSF, DARPA, and most of the Energy Department's national laboratories. "We didn't set out to create a consortium," says Caltech's Paul Messina, who will be the group's executive director. But the technology was ready, and all these institutions had researchers aching to attack computational problems on a massive scale. "So we said, 'Let's go,' " says Messina.

Super supercomputer. *Robert Rockwell (left) and Justin Rattner of Intel stand next to mockup .*

What's On Your Mind? Check BrainMap

First there was the human genome database. Then there was the *c. elegans* (or roundworm) genome electronic data network. Now, neuroscientists are launching their own computerized database to stockpile the glut of information they're learning about the brain. Called BrainMap, it will contain data describing the structure and locations of functions in the brain, ranging from the sites active in vision and speech to those that are engaged in anxiety and other emotions.

BrainMap is the brainchild of neuroscientist Peter Fox and colleagues at Johns Hopkins University—the center that brought the world the Human Genome Data Base. "We hope to develop a system similar to the genome database," says Fox.

Fox is currently negotiating agreements with six universities in the United States, England, and Canada known for their expertise in brain mapping research. Their data will be pooled in a prototype personal computer system to come online within the next 6 months. Later the system will be expanded to a mainframe network accessible to researchers around the world.

Information on the network will be presented as numerical coordinates that describe the precise locations of functions or tasks in the brain. That will require the establishment of a standardized set of coordinates. Indeed, getting neuroscientists to describe their data in uniform terms is one of the primary motives behind the database, says Fox. He offers them a strong incentive: Unpublished data to be available on BrainMap could give its users a headstart of a year or more on their research.

Antelope Death Adds to BSE Worries

The recent death of a young kudu, an exotic species of antelope, at the London Zoo is causing British government scientists some anxiety. The kudu exhibited symptoms typical of bovine spongiform encephalopathy (BSE), the "mad cow disease" that is ravaging British dairy herds (*Science*, 28 September, p. 1492). In itself that is not so extraordinary; other zoo animals have already died of BSE. The worry is that one of those previous deaths was this kudu's mother. That raises the specter that BSE could be transmitted from mother to offspring. If so, it would be the first unequivocal demonstration of such transmission.

BSE almost certainly comes from bone meal rations that are made from sheep infected with scrapie. The London Zoo says it had not fed the calf with bone meal, although its mother probably caught BSE from her feed. Government scientists examining the young kudu's brain say it will be 3 weeks before they can say for certain whether BSE is to blame. Zoo director David Jones says, however, "The indications are that it probably is."

The government has been seeking to control the disease by banning sheep bone meal from feed and slaughtering cows with symptoms of BSE. But veterinary officials have downplayed the possibility of transmission through mothers. Although a special herd of 300 cattle is being studied for signs of transmission to calves, officials have refused to order tracing of calves from infected cows in the nation's cattle population.