UK accelerators

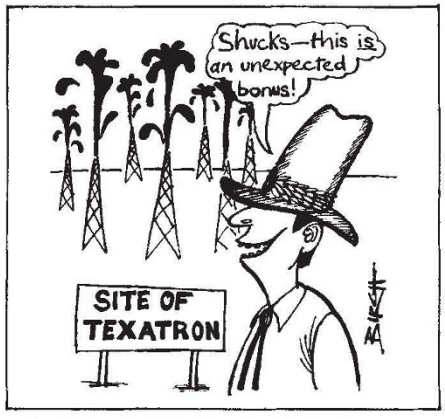
Texas jumps next big gun

Washington

TEXANS, never shy when it comes to thinking big or spending big, have made an early bid for the massive colliding-beam proton acccelerator recently endorsed by a federal advisory panel (see *Nature* 14 July, p.105). Undeterred by the fact that the project has not yet even been submitted for administration or congressional approval or by the absence of even a conceptual design for the accelerator, Texas has floated a proposal to pay for the site and the tunnel construction if it is located in the state.

Peter McIntyre, a physicist at Texas A&M University and the moving force behind the scheme, has enlisted the support of four Texas universities (besides his own, the University of Texas at Austin, Rice University and the University of Houston) and the governor of the state, Democrat Mark White. In a letter to the Department of Energy, White expressed his strong support for the proposal and pointed out the benefits for industrial growth in his state. An aide to the governor said that the state revenues, private sources including the state's oil companies and high-tech industries, and the endowment incomes of Texas A&M and University of Texas (which derive in substantial part from oil and gas leases) could be tapped to raise the $250 million needed.

The host site for accelerators is usually given free, but construction costs are as a



rule borne totally by the federal government. Texas's offer to carry the construction costs of the tunnel is something of a surprise. McIntyre said that proprietary research he is pursuing on tunnelling technology could substantially reduce the cost.

Texas A&M and the University of Texas have of late adopted an aggressive policy to build up their physics departments. Last year, the University of Texas scored a coup by luring Harvard physicist Steven Weinberg, apparently by offering him a particularly high salary; Texas A&M has been pursuing Sheldon Glashow, reportedly with an even heftier salary offer. The new accelerator, both because of its advanced physics potential and because its high cost will rule out construction of any other new machines elsewhere, will ensure that the institution that gets it is *the* major particle physics research centre for some time to come.

"With the governor behind us and with the university administration behind us, we think our prospects are good", McIntyre said. He envisages using the available technology of relatively low-field superferric magnets (perhaps 2 tesla) in a very large ring (perhaps 100 miles in circumference) — the original "desertron" concept (or, as it is known in Texas, the "Texatron"). A workshop held last spring at Cornell University examined the possibility of using a smaller ring with higher field superconducting magnets; but McIntyre, citing the research and development needed to build such magnets and mass-produce them, is scornful of this approach: "It's always possible to convince yourself that you can do a better job if you give yourself five years of R&D. That's the road to failure."

To some non-Texans, all of this seems premature. Burton Richter of Stanford University said that the Department of Energy has not even figured out how it will manage such a vast project. Richter said that before a proposal can be submitted to Congress, there has to be a research and development programme, criteria for selecting a site, a conceptual design and a realistic cost estimate.

James Leiss, who directs the Department of Energy's high-energy and nuclear physics programmes, expressed similar concern about getting too far ahead of the administration and Congress. "I think it's going to be three years in the R&D program before we have a site-selection criteria document written", he said. "I think it's much too early." And he added that Texas is not the only state that is interested. "It's obvious it's going to be an exciting facility that will have a lot of economic advantages." **Stephen Budiansky**

Radiation workers

Health bias to recruitment?

TRUE to its policy in recent years of releasing information on employees' radiation and mortality, British Nuclear Fuels Limited (BNFL), the publicly-owned monopoly for reprocessing and fabricating nuclear fuel, has published a progress report on its epidemiological study on the subject. The results show that employees and ex-employees at BNFL's Sellafield site (formerly called Windscale) have a significantly lower mortality rate than the population of England and Wales as a whole. The survey covered both cancer deaths and deaths from other causes. The company expects that the survey will be of particular public interest because of the attention recently paid to the incidence of cancer in Cumbria where Sellafield is sited.

The new data, for the Sellafield site, extend earlier results to include deaths up to the end of 1980, and cover some 11,500 employees and ex-employees who worked at Sellafield for periods that began before the end of 1975. The study population is divided into serving employees, those who have retired and other ex-employees. Observed/expected mortality ratios do not differ significantly between cancer and other deaths, and mortality is no higher among those classed as "radiation workers" than among others. Nor is there any significant increase in the rate of leukaemia, thyroid cancer and multiple myeloma.

The significant deficit of total deaths, both in the "cancer" and "non-cancer" categories, is most probably explained by a phenomenon known as the "healthy worker effect", whereby those presenting themselves for employment are likely to be more healthy, in general terms, than the population as a whole. This effect is expected to be smaller for cancer deaths, although the data show no such reduction, posssibly because of the ban on smoking enforced on radiation workers.

The observed number of deaths from causes other than cancer among those who had retired is, however, significantly

Sellafield mortality, 1948–1980

		Radiation workers	All workers
Bone marrow, bone and thyroid cancers	Serving	6 (4.4)	6 (5.2)
	Retired	2 (1.5)	2 (2.1)
	Other	2 (3.6)	2 (5.4)
	Total	10 (9.6)	10 (12.7)
Multiple myeloma	Serving	3 (1.3)	4 (1.5)
	Retired	0 (0.6)	0 (0.8)
	Other	0 (1.1)	0 (1.7)
	Total	3 (3.1)	4 (4.1)

Observed and (in parentheses) expected numbers of deaths among past and present employees from bone marrow, bone and thyroid cancers and multiple myeloma. From *Further Report on the BNFL Radiation-Mortality Study*, by E.A. Clough. Copies available from British Nuclear Fuels Limited.

greater than for the population as a whole, and cancer deaths in this group border on a significant excess. The healthy worker effect cannot explain these excess deaths. One possibility is that those retiring include some who retired early because of sickness. The results released so far do not permit an assessment of the extent to which the "healthy worker effect" is responsible for lowering total mortality rates. One epidemiologist suggested earlier this week that the company might look for an effect due to total time of employment, or make a comparison with other industries not involving radiation. **Tim Beardsley**

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