

the cost of building the SST would inevitably price the aircraft out of the ordinary passenger market (and it seems to be accepted by all the committees concerned that Concorde will be equally at a serious disadvantage). As it turns out, the arguments in favour of the SST project have also usually been economic. Some emphasize that the project will provide work, others that sales of supersonic transports could contribute in important ways to the United States balance of payments and still others say that the project is a necessary way of keeping in the front of aeronautical engineering. To be sure, Senator William Proxmire, the sharpest thorn in the flesh of the SST, has been making a good deal of the increase of skin cancer which there may be from exposure to cosmic rays in flight, but it is a long time since even the optimists have allowed themselves to look beyond the construction of the two prototypes on which a decision to manufacture would be based.

NUCLEAR WASTE

Internment in Kansas

THE continuing dispute about the proposal of the Atomic Energy Commission to bury radioactive waste in a disused salt mine near Lyons in Kansas reached the Joint Committee on Atomic Energy last week, when the committee nodded its grave head over the proposal in the new budget for the AEC, that money should now be spent on the acquisition of land for the permanent burial of cylinders of ceramic material containing substantial quantities of radioactivity. Under the arrangements now proposed, the Atomic Energy Commission would begin by shipping about three containers full of ceramic cylinders in 1976, and would increase the number of these shipments until something like 500 a year were being disposed of by the turn of the century. The radioactivity in the containers will be long lived, so that the half life of the arrangement will be of the order of a million years. At the hearings last week, as in the past, the Atomic Energy Commission's case (backed up towards the end of 1970 by a careful report from the National Academy of Science) is that enough experimental work has been done by now for there to be reasonable certainty that the activity will be safely contained. The AEC has been working on the site since the early sixties and, for what it is worth, the inhabitants of the nearest town would welcome some sign of industrial activity in the neighbourhood.

The case against the project, spelled out again last week by witnesses before the joint committee, is chiefly the re-

sponsibility of Dr William Hembledon of the University of Kansas, who has carried out for the state geological survey a study of the area in which nuclear wastes are to be buried. His criticism of the AEC proposal is so fierce that it has been answered point by point by no less a person than Dr Glen Seaborg, chairman of the AEC. At the hearings last week, the case presented was familiar enough, but it will be interesting to see how the joint committee manages to find a bridge between two quite opposing views. The state geologists argue that there are inadequate arrangements for carrying radioactive material to the site, that there are no arrangements for recovering material from the salt mine if something should go wrong and that the temperatures within the ceramic cylinders will be so great (1,800° C) that there are certain eventually to be occasions when cylinders break and release their active material into the strata underlying the salt mine. Perhaps recognizing that, in a head-on conflict, the AEC would probably win, the case against the burial ground was made to turn last week on the belief that more research and development is necessary if the disposal is to be properly controlled.

NORTH SLOPE

No Oil Flows Yet

THE construction of the Alaskan pipeline, already more than one year late, seems now destined for a further spell in limbo. The first reaction of the Department of the Interior to a bruising public inquiry last month seems to have been to commission further studies of the problems of navigating tankers in the treacherous waters between Seattle and the southern terminal at Valdez, and to begin a search for alternative routes to that on which the consortium of North Slope petroleum companies has already spent \$300 million. At the same time, the Canadian Government has thrown a spanner in the works by suggesting that oil could be carried away from Alaska by running a pipeline 300 miles to the east, either along the coast or some distance offshore, and then turning inland to follow for a time the valley of the Mackenzie River.

If the Department of the Interior and conservationists in the United States are excited at this prospect, the oil companies themselves are cool to the point of indifference. They point out that several years of further exploration would be necessary before they could tell whether a Canadian pipeline would be practical, that the route is twice as long as the other, that it would be necessary to operate the inland

route in the strange never-never world of international taxation and that there is no assurance that the environmental problems would be any easier along the Canadian route than they are known to be in Alaska. At the same time, there is some doubt that the Canadian Government would be able to persuade those who have elected it to office that it is right and proper to import environmental problems which are apparently unacceptable in the United States. More should be known about this by the end of the week, when the oil companies with interests in Alaska will parade in Ottawa for further information.

The case against the Department of the Interior's description of the environmental problems of building the Alaskan pipeline was fully and even over-zealously deployed at a public inquiry last month. Most of the difficulties then experienced seemed to stem from the way in which the department laconically advised readers of its report that suitably careful operation of the pipeline would reduce "foreseeable environmental costs to acceptable levels". Given the department's careful listing of all the hazards to be avoided, however, it is inevitable that readers of its document should have been as alarmed as if they had been children told of all the dreadful things that would not happen to them if only they were able to behave correctly. In retrospect, however, the report may also have been injudicious in saying without investigation at first hand that the Canadian route would "serve mainly to shift the location of the ecological problems rather than cure them". The department's own assessment of the problem, the statutory document now known as the "environmental impact statement", also leads it on to say that a Canadian route would entail that the pipeline would be outside the direct control of the United States and that it would in any case be between two and four years before the route could be proved.

Possibly these tart comments have helped to move the Canadian Government to what appears to be a vigorous and unwonted demonstration that it is willing to help solve what is essentially an American problem. On the face of things, it will be hard for both countries to operate a pipeline system of this kind without coordinating their policies on the consumption of fuel in general and oil in particular.

The way things have turned out, the attention of the environmentalists seems to have been concentrated first on the possibility that a pipeline across Alaska would be broken by earthquakes and then on the danger that the off-loading operations at the southern end of the pipeline would pollute what is necessarily one of the wildest stretches of coastline in the world.