

(reprinted with permission from New Scientist, 29 January 1976)

Fuels, minerals and human survival, by Charles B. Reed (John Wiley)

When in 1972 the citizens of Austin, Texas, were considering whether to participate in the South Texas nuclear power station project one of the qualified people they queried was C B Reed. Reed, although an engineer with more than 30 years of experience, found that in order to answer their questions he had to do a great deal of homework. This book is the result, and, frankly, it is rather strange.

Reed concludes his preface by the non-negotiable assertion: "It is technically accurate, and documented". He then makes his first technical mistake on the first page of Chapter 1, alleging that uranium oxide reactor fuel pellets are encapsulated in metal before they are packed into a fuel rod. (They are not.) On the next page he declares that the primary coolant in light-water reactor picks up "neutron-emitting material .. through pin-holes in the wall of the fuel rods", which then "creates radioactive elements from the minerals in the secondary coolant circulating in another closed circuit designed to condense the primary coolant from steam back to water". It is by no means unusual to find such garbled misconceptions among lay critics of nuclear activities. But it is to say the least unexpected in a book written by an engineer, purporting to offer guidance to the lay reader and proclaiming itself technically accurate. The succeeding pages are littered with similar mis-statements.

The reason for these unfortunate deviations from the "technically accurate" becomes clear when - with disconcerting suddenness - the author finally finds himself on his own professional turf, geology. With an avalanche of esoteric technical discussion (this time clearly accurate in quite numbing detail) he describes the possible approaches to subsurface storage and disposal of high-level radioactive waste, and endorses with enthusiasm the notion of sinking waste canisters into the Antarctic ice cap. In doing so, he underlines an important consideration too often overlooked in present-day controversy: even if for some reason we were to decide collectively to cease forthwith any further nuclear activities, we would still have to reckon with the nuclear materials already accumulated, including long lived fission products and actinides.

Reed's approach to this problem is the same as his approach to the whole of the book: impatient, brusque, and - probably - over-hasty. He discusses alternative energy sources, energy conservation, resource depletion, and their implications, and pours forth a deluge of data. But the wildly uneven level of the writing, and the suspicions engendered by his early miscues, make the book more of a curiosity than the *vade-mecum* the author apparently intended. - *Walt Patterson*

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