to use continuous fuel reprocessing schemes. These features enable homogeneous thermal breeders to achieve breeding ratios of ~1.05 and thus become breeders in the true sense of the word. The other two types are at best near breeders, since their breeding ratios are very close to 1.0.

The reactor types considered differ widely with respect to their level of development. Thus at one extreme, the CANDU-HWSR can draw on experience that includes 16-GW(electric) capacity in operation or under construction, while the HWSR was operated only as a 1-MW(thermal) experimental facility. The authors thus were faced with a formidable task in trying to compare the reactor types on an equivalent basis. In a sense they met this task somewhat too successfully. By this I mean that the allocation of space information and emphasis is almost identical for each reactor type. This is probably a good way to maintain amity among four different contributing groups, but it does lead to an unwitting distortion. The impression is left that all of the four reactor types have a similar viability. This impression is reinforced by a careful avoidance of preference for any reactor type in the introductory or conclusion sections. It is in this respect that the cooperative effort, which naturally has to balance the views of the contributing parties, shows its influence. A more definite comparison between the reactor types would have been welcome.

However, as noted the information is available. Each reactor type is described in some detail in a separate appendix. The descriptions include diagrams, process flow sheets, and an especially welcome section reviewing the history of the reactor and potential scale-up problems. Since the appendixes were contributed by the separate groups in question, it is quite understandable that they do stress the positive features of each type. However, there is one aspect of this emphasis of the positive that should be strongly critized. The descriptions of both the HWSR and the MSBR contain phrases that state that the reactors are "inherently safe." What is meant is that they do have a prompt negative temperature coefficient of reactivity. In one case it is even stated that "the dilute heat source makes the 'China Syndrome' less of a concern" (p. 94). This is inexcusable. Safety is a too comprehensive, too complex, and too emotional and political a problem to be dealt with on the basis of single features. A prompt negative temperature coefficient should certainly be noted and if possible quantified (this is not done) but the question of "inherent safety" can only be addressed in a more responsible manner.

The above points had to be made because the issue (though minor from the point of view of the subject analyzed in the book) is important. It therefore bears repeating. The reviewed book is indeed well written and organized. It achieves its purpose of comparing thermal breeders in a wider context. In addition, it summarizes information about four reactor types, for three of which information is not easy to find. For 140 pages of text, this is no small achievement.

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**Short Course in Uranium Deposits: Their Mineralogy and Origin**

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| *Editor* | M. M. Kimberley |
| *Publisher* | University of Toronto Press, Toronto (1978) |
| *Pages* | 521 |
| *Price* | $8.00 |
| *Reviewer* | Arthur L. Reesman |

This volume was published by photo-offset *just* prior to the three-day course and the quality of the manuscripts is not as good as *Formation of Uranium Ore Deposits*. The course, which was attended by over 200, is yours for less than 5% of the registration fee. The background of course participants was varied (ranging from students to university faculty and specialists who had been in uranium exploration for years). This book should serve a wider readership than did *Formation of Uranium Ore Deposits*, because it was designed to be a teaching tool. A glossary at the end of the book covers most of the less commonly used geological terms, but it is assumed that the reader is a geologist.

The course was designed to take the average geologist and provided an intensive introduction to the specialized study of uranium mineralization. Even though the bulk of the deposits covered in detail are Canadian, reflecting the experiences of the authors and the interests of the course participants, the principles of ore deposition and the applicability to other deposits make this book valuable to the "professionals" from other geographic regions.

The 21 lectures (papers) are divided into five sections. Section A, Uranium Geochemistry, emphasizes the low-temperature geochemistry and mobility of uranium in the near-surface environment. Section B, Uranium Mineralogy, covers the complex group of uranium-bearing minerals. Identification of most of the 150 or so minerals is so difficult that a mineralogist is needed; however, the more common uranium minerals can be identified in the field with some certainty (if they are large enough). This section is helpful in the broader sense of re-emphasizing the significance of understanding the uranium-bearing minerals, but it will not transform the reader into a specialist in uranium mineralogy.

After quick lessons in uranium geochemistry and mineralogy, Section C covers the Classification and Description of Selected Deposits (five papers). There is no single or universal system for classifying uranium deposits. Most classifications place an emphasis on the genesis of the deposit (when possible) but descriptive features are also used. Classification of deposits is an important step in exploration of similar deposits. Examples of deposits come from a variety of locations, but they favor the Canadian deposits.

Roll-Type and Stratiform Deposits are covered in Section D (five papers). This group of deposits is given special treatment because it accounts for most uranium production, reserves, and potential future reserves. Section E focuses in depth on the Uranium Deposits in Northern Saskatchewan (six papers).

The bibiographies with the papers are very important for those who wish to follow up on a particular aspect in the papers. Overall it is an excellent buy and it should be considered as a good first step in studying uranium ore deposits. The overlap between the *Short Course in Uranium Deposits* and *Formation of Uranium Ore Deposits* is minimal and both should be purchased by libraries and serious students of uranium deposits.

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