ter on perturbation theory to infinite order provides an introduction to many-body theory through a heuristic discussion of a number of specific examples.

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Dynamics of Nuclear Reactors

D. L. Hetrick

542 pp. Univ. of Chicago Press, Chicago, Ill., 1971. $18.50

Reactor physics is very much an applied subject, and it has grown over the last thirty years without much of a formal framework. It is not surprising then, that it is full of *ad hoc* solutions that are very confusing to beginners, and nowhere is this more evident than in the sub-field of reactor dynamics. David L. Hetrick has taken the more basic part of that subfield and has set out the underlying general principles and collected and discussed the mathematical techniques in a logical and comparative way.

He mainly restricts himself to the "point-source," reactor-as-a-whole, approach, and he deals with the effects of a wide variety of reactivity perturbations. The problems lie in the ground common to reactor physics and reactor control and the two chapters on linear and nonlinear stability are particularly good. The book is suitable for graduate students in nuclear engineering and just possibly at an earlier level for students who have decided on their specialization. It has the commendable habit of summarizing the methods before they are developed.

The solutions are essentially analytical and they are best suited to explain the behavior of small, rather simple, systems. The designer of power reactors has to find "approximate solutions to exact problems rather than exact solutions to approximate problems," and he is faced with the terrible spatial interactions of control rods, booster rods, temperature coefficients, void effects, xenon transients, and so on. In a balanced course for future designers the material in the book should be supplemented with the more numerical techniques that are needed for spatial details.

I have two minor criticisms. Firstly, in view of the precisely stated boundaries and comprehensive coverage, the words "point reactor" and "analytical methods" might well have been included in the title. Secondly, the last chapter contains a few pages on neutron pulses and waves and a very brief mention of the methods for space-dependent kinetics, and I think that it could have been omitted. However, I hope that someday soon the author will expand it into a review of the numerical, computer-oriented, techniques that are needed for the spatial problems with large numbers of variables.

I enjoyed reading the book and I recommend it strongly.

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Introduction to Quantum Chemistry

C. R. Gatz

550 pp. Charles E. Merrill, Columbus, Ohio, 1971. $15.95

Quantum chemistry can be loosely defined as the broad array of quantum-mechanical techniques—ranging from semi-empirical to *a priori*—employed by chemists in interpreting and predicting properties of molecules in their isolated, aggregate and reactive states. The methods of quantum chemistry are fast becoming indispensable for theoretical and experimental chemists alike. Thus it is vital that all chem-