thesis she fails to convince the reader that she has not confused rationalization with motivation.

Similarly, Schrepfer does not articulate the political framework of the developments she discusses, which weakens her argument that the Second World War marked a discontinuity in political processes. Though class constituencies of preservationism may have indeed shifted and reform ideology and rhetoric found new language, it is not at all clear that postwar politics represented a break with prewar politics of interest-group administrative government. This form of government had been developing since the turn of the century and was fully in place with the New Deal. The preservationism of the 1950's and 1960's, with its citizen activism and militancy, appears less as the appearance of a new form of politics than as the clamorous entry of a new interest group into an old form of politics.

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Atomic Processes

Atoms in Astrophysics. P. G. BURKE, W. B. EISSNER, D. G. HUMMER, and I. C. PERCIVAL, Eds. Plenum, New York, 1983. xviii, 356 pp., illus. $49.50. Physics of Atoms and Molecules.

This volume commemorates the 60th birthday of Michael J. Seaton of University College London. It contains a collection of papers by Seaton's students and colleagues that review some of the research in which Seaton has played a pioneering role. Because Seaton has been the dominant figure in the application of atomic physics to astronomy over the last quarter century, the topics include many of the most important ones in the field.

Seaton's great contributions are due in part to his ability to work in both atomic physics and astrophysics. Most of the readers of this book are likely to be narrower in perspective, falling into one of two camps: atomic physicists, who produce atomic data, and astrophysicists, who consume the data. (This reviewer is one of the latter.) Despite its title, the book is primarily concerned with the calculation of atomic processes, and much less with the astrophysical applications of the atomic data. As a result, the book will be of great value to astrophysicists who want to learn more about the calculational techniques employed by atomic physicists and to graduate students in atomic physics. The book does not primarily address the pressing problem of communicating the atomic data needs of astrophysicists to the atomic physicists.

In general, the book provides excellent reviews of the topics covered. Most of the sections have very detailed bibliographies. For the most part, notation is consistent throughout the book. The level of the book is closer to that of an advanced textbook than to that of a collection of professional reviews, in that fairly detailed derivations of important results are usually given rather than just the results themselves.

The book emphasizes the calculation of collisional processes. There is an excellent review of electron-ion (or atom) collision calculations, including discussion of the basis of the close-coupling equations and techniques for their numerical solution. The coupling of these solutions to valid asymptotic solutions and the form of the electron-atom and electron-molecule potentials at large distances are also discussed. The close-coupled equations are not useful for calculating collisional processes for the highly excited states that produce radio recombination lines in astrophysics, and the semi-classical techniques pioneered by Seaton for this problem are described. As Seaton first pointed out, protons may be more important than electrons in collisional exciting closely spaced energy levels, and these proton excitation processes are discussed. The utility of quantum defect theory in extrapolating sparse experimental or theoretical data is reviewed.

One very useful feature of the book is that it provides a helpful introduction and general discussion of the various computer program packages for atomic calculations. These programs (IMPACT, SUPERSTRUCTURE, RMATRX, and so on) can provide consistent and extremely accurate atomic data. By consolidating the numerical methods used into a small number of general-purpose programs, these packages have helped to reduce the proliferation of atomic data calculated at different levels of approximation. (Seaton described this proliferation of calculations as the "one man—one cross section" problem.) In most cases, the programs use standardized input and output and have preprocessors that allow the code to be optimized for the specific task and computer (and array processor) being used. Recent extensions of these programs to include relativistic effects are discussed.

Though the applications of the atomic data are not discussed extensively, there is an introduction to electron-ion collisional processes in diffuse plasmas, a review of the excitation of forbidden lines in aurora, and a more detailed review of the observations and theory of planetary nebulas. This last section has a nice, concise summary of recent infrared and ultraviolet observations of these systems.

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Advances in Heterocyclic Chemistry. Vol. 32. A. R. Katritzky, Ed. Academic Press, New York, 1982. x, 404 pp., illus. $74.50.

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