participants. One wonders: were there no blunders in this complex undertaking? Was it *all* so astonishingly successful, or have some failures been conveniently forgotten? No matter; if there were failures, they were minor and swiftly bypassed by the tide of success. Is the drama overdrawn? In one or two places, perhaps so. For the reviewer's taste, phrases like "The Last Card", "The Terrible Swift Sword", and "Bush Strikes Again" are a trifle over the line, but these are extreme examples; let us grant the authors some license in the interest of readability; readable their story certainly is. Accuracy? In the reviewer's knowledge, only one tiny slip was noticed; J. H. Manley was not engaged in cyclotron work at the Metallurgical Laboratory, as stated on page 103, although he would have been welcome. Fairness? On the whole, good. Names are generously used, although many are perforce left out. One can sense in a small degree that some informants probably collaborated with the authors more effectively than did others, but some of this would seem to be inevitable.

In summary, Hewlett and Anderson have given us a superb job of history writing and one that will, in its various sections, appeal to physicists, chemists, engineers, moralists, lawyers, politicians, students of international affairs, and in fact to anybody alive to the strongest force that is shaping the affairs of the world today.

Atomic and Molecular Processes. D. R. Bates, ed. Vol. 13 of Pure and Applied Physics, edited by H. S. W. Massey. 904 pp. Academic Press Inc., New York, 1962. $19.50. *Reviewed by I. Amdur, Massachusetts Institute of Technology.*

NOT since the appearance in 1952 of the now classic *Electronic and Ionic Impact Phenomena* by H. S. W. Massey and E. H. S. Burhop have I seen a book which has dealt so thoroughly and authoritatively with theoretical and experimental aspects of radiative and collision processes in ionic, atomic, and molecular systems. Professor Bates has shown excellent judgment in enlisting as contributors twenty-one investigators, each of whom is active in at least one of the areas covered in the volume. The special expertness that comes from actually working in a field characterizes each of the twenty-one sections and makes it obvious that the discussions and conclusions are as authoritative as one is likely to find in a subject in which there is so much current and diverse activity. There is so very little of the unevenness in scientific and literary quality usually found in books of this type that one's faith in the possibility of good cooperative compilations is restored.

The following topics are surveyed, with special emphasis on contemporary development in both theory and experiment: forbidden and allowed transitions; photoionization and photodetachment; recombination, electronic and ionic; attachment and ionization coefficients; elastic and inelastic scattering of electrons; energy loss by slow electronics; collision broadening of spectral lines; collisions in atomic systems with specific treatment of range, energy loss, excitation, ionization detachment, charge transfer, elastic scattering, mobility, diffusion, and relaxation in gases; high temperature shock waves; and chemical processes.

There are very extensive and complete bibliographies at the end of each section and a subject index listing all the species of atom or molecule referred to in the text. This particular index should prove more useful than the usual general subject index, which is also included, since general indices seem to have an uncanny ability to list topics under designations other than those which occur to the reader.

There is one section, Chemical Processes, which differs in character from the others. Each of the other sections treats in depth a relatively narrow aspect of atomic and molecular processes. The discussion of chemical processes is more encyclopedic and tends to cover broad areas of chemical kinetics. As a result, it does not carry the air of authority of the more specialized treatments. Since treatises the size of the present volume have in fact been devoted exclusively to chemical processes, the criticism is not one of the author but rather of the inclusion of so broad a topic in a compilation where the average length per section is of necessity under fifty pages.

It is a rare pleasure to agree wholeheartedly with the publisher's prediction on the jacket of the book: "The volume will for many years to come be an indispensable reference to anyone engaged in research on atomic physics, molecular physics, plasma physics, astrophysics or space science."

Elementary Quantum Field Theory. By Ernest M. Henley and Walter Thirring. 277 pp. McGraw-Hill Book Co., Inc., New York, 1962. $8.95. *Reviewed by J. C. Polkinghorne, University of Cambridge.*

IN recent years, there has been no lack of books about quantum field theory; the two authors of this volume have achieved a particular distinction in writing one of a new kind. It is elementary in scope, not aspiring to Feynman graphs, let alone dispersion theory, but its aim is to convey a thorough understanding of the conceptual framework of quantum field theory. To do so, free from irrelevant mathematical complication, a series of simple models is discussed.

The first is that of a free Bose field. The central importance of the harmonic oscillator with its zero-point fluctuations is clearly established. Then the solutions of neutral scalar theory, pair theory, and the Lee model are described and the insights they afford into more realistic theories discussed. In the final section, a thorough account of Chew-Low static theory is given. This enables the authors to make a satisfying final contact with the aim of all physics, the interpretation of experimental data.

It is an excellent pedagogical plan, admirably executed. The authors are particularly good at summarizing the intuitive understanding behind a piece of for-