



BITTER

theory—in solving social problems. Although recognizing that some social problems may be caused by science itself, he did not even mention the possibility that new discoveries and inventions might be suppressed for fear of their consequences. In response to the threat of nuclear bombing, he proposed research on population dispersal.

Obvious difficulties exist in making a selection of a scientist's works that will satisfy everyone. But it is better to make the attempt (assuming the scientist is not so important that *all* his works should be reprinted) than to publish only a miscellaneous collection of essays by his colleagues and students (the usual *Festschrift*) or nothing at all. This volume sets an excellent example that should be followed by others in the future.

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Advances in Atomic and Molecular Physics, Vol. 5

D. R. Bates, Immanuel Estermann, eds.
432 pp. Academic, New York, 1969.
\$18.50

This volume continues an excellent series of collected monographs. Topics are timely and the work is current.

As with earlier issues, experimental and theoretical contributions are commingled. In the experimental group are chapters on flowing afterglow measure-

ments of ion-neutral reactions by E. E. Ferguson, F. C. Fehsenfeld and A. L. Schemltekopf; on reactions between merging beams with small relative energies by Roy H. Neynaber; on radio-frequency spectroscopy of ions stored in field cages by Hans G. Dehmelt, and a review of spectra from molecular solids by O. Schnepp.

In the theoretical group are chapters on the calculation of atomic phototransition probabilities by R. J. S. Crossley; on relativistic corrections to atomic energy levels by Holly Thomis Doyle; on collision broadening as viewed in terms of a classical analog by A. Ben-Reuven, and on tables of one- and two-particle coefficients of fractional parentage by C. D. H. Chisholm, A. Dalgarno and F. R. Innes. The included subjects continue the pattern of earlier volumes, where collision mechanics and photoprocesses are established themes.

The first two papers describe complementing methods to obtain ion-molecule reactive cross sections at thermal energies. The afterglow studies have been particularly fertile to the nurture of useful aeronomic data; the more sophisticated merging-beam techniques promise and achieve increased insight by better defining the collision mechanics. The chapter on radiofrequency spectroscopy continues an earlier monograph by the same author, published in volume 3; most readers will need to refer to this earlier paper. The radio-frequency experiments described in the present volume are exceptionally elegant

and precise. This technique, too, could be informatively applied to studies of low energy ion-molecule reactions from well defined collisions.

The chapters on atomic transition probabilities and on relativistic corrections to atomic energy levels are very readable and mutually complementing. Interested readers will also wish to review A. L. Stewart's monograph in volume 3. The section on spectra of molecular solids reviews the dynamical information derivable about simple molecules from infrared spectra of their condensed phases.

The contents of this volume are, for the most part, reported as current and continuing rather than reflective and archival. It is an attractive feature of the "Advances" format that presentation styles may vary as appropriate to the relationship of the authors to their work. In several chapters, the authors are themselves pre-eminent contributors to their fields, and these chapters properly read in part as chronicles of a laboratory as well as of a physics speciality. In other sections, the more usual review style is followed. It is perhaps a concomitant penalty of the format that the several authors do not address a common readership. It is my opinion that most readers, expert in some speciality of physics, will seek in the monographs authoritative introductions into specialities in which the readers are not themselves expert. If this is so, generously discursive introductions are mandatory. In some of the articles, however, a too telegraphic brevity echoes habits formed when the authors have written for journals.

These failings, if failings they be, are exceptions in an otherwise excellent compendium. The volume deserves a place in the private libraries of working physicists.

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Phase-Space Dynamics of Particles

By A. J. Lichtenberg
331 pp. Wiley, New York, 1969. \$16.00

This is a unique book indispensable for the physicist concerned with accelerators or plasma physics. Going well beyond the cliché "filling of a gap" in the literature, it ties together many islands of physics that previously have been documented only in rather limited ways.

Allan Lichtenberg formerly worked in accelerator physics during the design and construction of the Cambridge Electron Accelerator and later became active in plasma physics; he is currently professor of electrical engineering at the University of California, Berkeley. Like