peared recently. The main emphasis is, of course, on magnetic dipole moments since both the experimental data and the theoretical literature pertaining thereto are considerably more extensive than that concerned with electric quadrupole moments. Of course, the latter receives adequate attention as well. As the title indicates, the discussion is primarily concerned with efforts to account for the measured moments in terms of nuclear models. This discussion is quite complete but, like the review article, is confined to qualitative descriptions of the models and their pertinence for the problem of calculating nuclear moments. For the reader who wants to learn, with a minimum of effort, what has been accomplished and how it has been done, this treatment of this subject is recommended without qualification. The material is very well organized and clearly presented. For the reader who approaches the subject for the first time, it may be necessary in some cases to fill in the author's discussion, which is rather terse in spots, by references to the original literature. In this connection it may be noted that the bibliography is entirely adequate if not complete.

Quite properly the major part of the discussion is concerned with the individual particle model including extensions thereof (intermediate coupling and configurational mixing) and the unified model. Attention is given to exchange effects and velocity dependent forces in proportion to their importance in current theories. The table of moments for odd mass nuclei given in an appendix should be very useful. On the other hand, the discussion of angular momentum theory, given in another appendix, is perhaps too concise to be very illuminating. It is understandable that this section should be so brief in view of the fact that an adequate treatment of the subject would entail a discussion as long and as detailed as that comprising the main body of the book.

Without any doubt this monograph is a welcome addition to the library of nuclear structure and it is recommended to the attention of all those interested in that field.

Elements of Gasdynamics. By H. W. Liepmann and A. Roshko. 439 pp. John Wiley & Sons, Inc., New York, 1957. $11.00 (College Edition $9.25). *Reviewed by R. B. Lindsay, Brown University.*

One of the interesting developments of modern high-speed aerodynamics is the increased preoccupation of the aeronautical engineers with the flow of compressible fluids in the neighborhood of solid bodies. Problems of similar nature are encountered by the missile builders and by those who study the effects of large-scale explosions. It is therefore not surprising that during the past twenty years there has been a rebirth of interest in those parts of the theory of the flow of fluids originally stressed in Rayleigh's *Theory of Sound*. This subject has now been rechristened gasdynamics.

The present volume (one of the well known GALCIT Aeronautical Series) is an outgrowth of the *Introduc-*

tion to Aerodynamics of a Compressible Fluid by H. W. Liepmann and A. E. Puckett, which appeared in 1947. It is a somewhat more advanced treatment of the foundations of the subject and will be followed by another volume dealing primarily with detailed applications.

The book opens with an excellent brief résumé of the principles of thermodynamics. This is followed by a chapter on one-dimensional gasdynamics containing the derivation of the fundamental equation of continuity, momentum, and energy and their consequences. The normal shock relations for an ideal gas are developed. The third chapter is devoted to one-dimensional wave motion from the standpoint of both infinitesimal and finite amplitude waves. Subsequent topics include two-dimensional supersonic flow, in ducts and wind tunnels, three-dimensional flow, bodies of revolution, similarity rules of high-speed flow, and transonic flow. There is an illuminating thirty-page chapter on methods of measurement. The method of characteristics in the solution of hyperbolic equations is set forth, though without too much mathematical background. The last two chapters are devoted to the effects of viscosity and heat conduction and to the kinetic theory of gases. It seems a far cry from macroscopic aerodynamics to statistics and probability, but there is no way of avoiding these considerations if high-speed flow and rarefied gases are to be adequately handled.

The volume is well produced with excellent figures and charts. There is also a collection of illustrative exercises. Both physicists and engineers will find this a useful book.

X-Rays. Vol. 30 of Handbuch der Physik. Edited by S. Flügge. 384 pp. Springer-Verlag, Berlin, Germany, 1957. DM 88.00 (subscription price DM 70.40). *Reviewed by L. Marton, National Bureau of Standards.*

The thirtieth volume of the *Encyclopedia of Physics* starts with a contribution by Werner Schaaffs on the subject of the Production of X-Rays. This is followed by Experimental Methods of X-Ray Spectroscopy: Ordinary Wave-Lengths, by Arne Eld Sandström. The following chapter by Diran H. Tomboulian is on The Experimental Methods of Soft X-Ray Spectroscopy and the Valence Band Spectra of the Light Elements. Two more chapters follow: one on X-Ray Microscopy by Paul Kirkpatrick and Howard Hunt Pattee, Jr. and one on The Continuous X-Ray Spectrum by Seymour Town Stephenson. The editor is to be praised that the most important chapter, I mean that by Sandström, is the longest and probably also the best written one. This last is hard to decide. Several other chapters are very well written, but I especially like the Sandström chapter. It starts with fundamentals of x-ray spectroscopy; then there follows a description of x-ray spectrographs and spectrometers, the refraction of x-rays, the diffraction of x-rays and the resolving power of crystal spectrographs, experimental results of x-ray emission spectra, experimental results of x-ray absorption spectra, the normal energy levels of the atoms, widths and intensi-