The monographs vary considerably in many respects, but particularly as to their degree of comprehensiveness.

Householder's article on numerical analysis is as systematic as one could be in the space available. Saaty's article on operations analysis takes a different approach, and aims rather to present the subject by fairly typical examples taken from its various branches. This is done with a rare combination of lucidity and charm. Schweber has contributed three chapters, based on a lecture course on advanced quantum mechanics. The analysis is very clear with the emphasis on physical meaning. The article by Mintzer, on transport in gases, is deliberately limited in scope to the derivation of the Boltzmann equation and a few applications.

There would be little point in listing here the detailed contents, especially as the information is freely available in the publisher's catalogue. One can say, however, that theoretical physicists may well find the book at least as useful as Volume 1, if for very different reasons.

And there is another thought. Of the twelve articles in Volume 2, at least six are on subjects which existed either not at all or at most in embryo at the time that Volume 1 appeared two decades ago. The remaining articles deal with subjects whose names meant something already then, which makes it even the more impressive to note how much of the work in them is of very recent date.

An Introduction to Crystallography. By F. C. Phillips. 340 pp. Wiley, New York, 1964. $6.00.
Reviewed by H. D. Keith, Bell Telephone Laboratories.

Since the first edition was published eighteen years ago, Dr. Phillips' book has served as a standard text for five or six "generations" of students at British universities and also as a valued companion to most crystallographers who have come upon it. Now that the third edition is being printed on both sides of the Atlantic it may become as well known in classrooms and laboratories in the United States as it deserves to be.

Individuality in such a book as this is achieved more by approach than

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by choice of content. Phillips treats the symmetry of crystals from the historical morphological standpoint, believing, from his experience, that it is best for elementary students. Mathematics he employs sparingly but with a simplicity that should appeal to students of poorer mathematical ability. Mineralogical illustrations are used freely, but the temptation to digress unnecessarily into mineralogy for its own sake is carefully avoided. A chapter on x-ray diffraction (added in the second edition) provides a bridge connecting with the approach adopted widely in most recent textbooks. Three additional appendices (on two- and three-circle goniometers, on the gnomonic projection, and on symmetry of pattern) have been included in the new third edition.

Dr. Phillips combines rare expository skill with the capacity for writing in a direct and compact style. Though closely reasoned, his text is never dry and exhibits the seemingly effortless fluency that is generally achieved only by taking pains over every word. A reviewer of the second edition said that "one is conscious of the touches of a master at imparting knowledge to students." I endorse but cannot improve on that recommendation. I would merely add that the same touches make the book an ideal reference for refreshing the memory. Each point will be found easily, for it will inevitably appear in the only place possible in a remarkably consistent and logical development of the subject. This is a book for crystallographers at all stages to prize and one which many would be proud to have written.

Thermodynamics of Small Systems, Part 1. By Terrell L. Hill. 171 pp. Benjamin, New York, 1963. Cloth $10.00, paper $6.95. **Thermodynamics of Small Systems, Part 2.** By Terrell L. Hill. 210 pp. Benjamin, New York, 1964. $12.50.
Reviewed by Stuart A. Rice, University of Chicago.

In writing *Thermodynamics of Small Systems*, Terrell Hill has revived a nineteenth-century tradition. For this book is devoted entirely to a coherent and extended account of new and original research. As such, it cannot be judged by the standards applied to most books, since questions of timeliness, or extent of coverage, etc., are irrelevant.

The thermodynamics of small systems is concerned with the formulation of the relationships connecting macroscopic variables when first-order corrections due to finite size of the system are important. As the author points out, there are many such systems, including some of great biological importance. The analysis is presented clearly, assuming only a thorough knowledge of ordinary chemical thermodynamics. The fifteen chapters are devoted to analyses of situations with different choices for the sets of environmental variables, and with one or more specific examples worked out in each case. There is occasional use of simple statistical models for illustrative purposes.

It is my opinion that this work represents a valuable contribution to the scientific literature. Indeed, as a result of my reading, I have already had occasion to use or extend some of the ideas proposed. Because of the specialization inherent in the subject, it is obvious that the book will not be useful to all. However, for those who have occasion to use thermodynamics in the study of small systems, this book represents a storehouse of suggestions and provocative ideas.

The only complaint I wish to register is against the price. I consider the price ($22.50 for 381 pages) scandalously high.

Partial Differential Equations of Mathematical Physics, Volume 1. By A. N. Tychonov and A. A. Samarski. Translated from Russian by S. Radding. 380 pp. Holden-Day, San Francisco, 1964. $11.75.
Reviewed by J. E. Romain, Centre de Recherches Routières, Sterrebeek, Belgium.

Generally speaking, a physicist would not consider a book on partial differential equations a particularly exhilarating piece of reading. The book under review is an exception to this rule, as it is written for physicists in a physical spirit, even though the mathematical rigor is definitely not neglected. Indeed, the physical orientation is prominent throughout the book in the presentation, in the