Books

Temperature: Its Measurement and Control in Science and Industry. Vol. II. Edited by Hugh C. Wolfe for the American Institute of Physics (Symposium, Washington, D. C., 1954). 467 pp. Reinhold Publishing Corp., New York, 1955. $12.00. *Reviewed by E. A. Lynton, Rutgers University.*

It is rare to find in a single volume such a rich combination of the useful and the pleasant as is contained in the 467 pages of this volume. Virtually everybody who in his work has to measure a temperature will find in one or more of the included papers useful and up-to-date information about the specific temperature range and methods of measurements in which he is interested. In addition he can have the pleasure of reading discussions both of general concepts of thermometry, and of problems and methods pertinent to other regions of temperature.

The book contains all but two of the papers read at the Third International Symposium on Temperature held in Washington, D. C., in October 1954. The twenty-four contributions are grouped, somewhat arbitrarily, into five sections: General Concepts, Standards and Scales, Transient Phenomena, Experimental Measurements, and Miscellaneous Topics. There is some but on the whole remarkably little duplication, which speaks highly for the editorial efforts of Dr. Wolfe, and with few exceptions (and this is really the most remarkable feature of the book) the papers are clearly written discussions of an entire subject, rather than fragmentary accounts of individual work.

With such a wide range of subjects covered in this volume it would not be fair for a reviewer working in low temperatures to compare the excellent papers on this subject with those covering other temperature regions. It is, however, in order to comment favorably on the lucidness of Sir Francis Simon's paper on "The Concept of Temperature Near Absolute Zero", and to welcome the inclusion of "The Temperature Concept" by H. C. Wolfe, "Thermodynamics of Irreversible Processes and Fluctuations" by I. Prigogine, and "Relaxation of Partial Temperatures", by K. F. Herzfeld. And as an introduction to fields totally different from my own I particularly enjoyed Cecilia Payne-Gaposchkin's discussion of "Astrophysical Temperatures" and F. G. Brickwedde's account of "Temperatures in Atomic Explosions".

All in all, then, this book is an eminently worthy companion to the classic Volume I published in 1939.

Applications of Spinor Invariants in Atomic Physics. By H. C. Brinkman. 74 pp. (North-Holland, Holland) Interscience Publishers, Inc., New York, 1956. $3.25. *Reviewed by M. E. Rose, Oak Ridge National Laboratory.*

Ever since the advent of quantum mechanics there has existed a rather urgent need for the development of a mathematical technique for handling problems in which transformation properties under rotations are the essential consideration. This is the theory of angular momentum and this is the subject with which Professor Brinkman's brief but deft monograph is concerned.

On the surface it would appear that there have been at least two approaches to this problem. The one which forms the subject of Professor Brinkman's exposition is the method of spinor invariants which was developed and used largely by Kramers and co-workers. The other is the method of group theory which owes so much to the efforts of Wigner and Racah. Quite naturally, this second point of view is not represented here. It is the feeling of this reviewer that with the developments of the past several years, the group theoretic method has been demonstrated to be the "ultimate" form of the theory. The author is aware of the limitations of the spinor method. Witness the statement (page 50) that "for systems of more than two electrons the difficulties of constructing wave functions from one electron wave functions are very great".

However, the method of spinors is one of great beauty and in Professor Brinkman's hands it is very skillfully described. Perhaps it is not quite proper to think of a competition between two techniques since, in at least one instance, the derivation of the representations of the rotation group, the spinor method is not only the standard procedure but the only one which is practical—so far as this reviewer is aware. If one takes the (legitimate) point of view that the methods described in this book are an integral part but not the whole of angular momentum theory the limitations of the method are understandable and not serious. It is a tool which does part of the job and there is no necessity to demand that it do more.

Errors of Observation and their Treatment. By J. Topping. 119 pp. The Institute of Physics, London, England, 1955. Paperbound 5s. *Reviewed by R. A. Beth, Brookhaven National Laboratory.*

The (British) Institute of Physics is publishing a series of inexpensive (5s, or about 70 cents each) monographs "intended for general reading by students in courses for the Higher National Certificate in Applied Physics". In view of our desire to increase the training of physicists and engineers the series should also prove useful to students in this country.

The present booklet constitutes one of the best brief and elementary introductions to the theory of errors available to students. After a short discussion of errors of observation the statistical ideas underlying their