Books

The International Dictionary of Physics and Electronics. Senior Editor, W. C. Michels, and 14 contributing editors. 1004 pp. D. Van Nostrand Co., Inc., Princeton, N. J., 1956. $20.00. *Reviewed by Ira M. Freeman, Rutgers University.*

One of the most important precepts to be emphasized in the teaching of physics is the necessity for careful and rigorous definition of the terms used. As the science attained a certain maturity, it began to be apparent that operational rather than strictly lexicographic definitions were desirable. For the past two decades, the slim *Glossary of Physics* compiled by L. D. Weld was virtually the only reference work in English to which a physicist might appeal for authoritative definitions of physical terms. Now comes a handsome, big dictionary covering the whole field of physics and electronics, as well as many relevant mathematical terms and concepts.

I compared Michels with Weld by weighing and found that the former was about 3½ times as heavy as the latter. The book, that is.

The thousand pages of entries are preceded by a brief but useful introduction dealing with units and dimensions. More than 300 illustrations, mainly line drawings and diagrams, supplement the text. One finds definitions of terms, elucidation of laws, relationships, equations, and concepts as well as descriptions of the most widely used instruments and apparatus. Generous cross-referencing adds much to the usefulness of the book.

The senior editor was assisted by the following American and British contributors: N. F. Beardsley, R. T. Beyer, H. C. Corben, Robert Lindsay, Robert B. Lindsay, J. C. May, K. Mendelssohn, G. Murphy, C. H. Page, Rudolph Sher, B. R. Sundheim, A. A. Townsend, A. D. Yoffe, and J. M. Ziman. In compiling the work, the contributors followed the policy of including all definitions that have been recommended by established professional groups.

The material provides definite and concise answers to a myriad of questions, yet it is remarkably complete. There are 29 separate items alone beginning with the word "transistor". It goes without saying that the contents are up-to-date. While there is no explicit entry for "antineutron", there are items entitled "anti-(particle)", "antineutrino", and "antiproton".

The word "international" in the full title of the book must not be mistakenly understood to imply that this is a multilingual dictionary. The entries are all in English, of course. There is no information on pronuncia-

tion. There are no entries that are explicitly biographical or historical. This is understandable, since the inclusion of such material would hopelessly increase the size of the book. As pointed out in the preface, the objective of the compliers has been restricted to that of providing a useful general reference, helpful even to the specialist in regions outside the bounds of his own field.

In spite of the dismaying bulk of the volume, I found myself browsing interestedly through the book. Many intriguing items lure the eye. I discovered, for example, what the Buys Ballot Law is—a most useful piece of information in this election year. Old friends such as Herpolhode, Magic Tee, Froude Number, and Zoomar Lens are all here.

Do not depend on your library for the availability of this volume, but acquire a copy of your own. It will prove a highly useful occupant of space (2¼ inches wide) on your bookshelf.

Gaseous Nebulae. Vol. 3 of The Internat'l Astrophysics Series. By L. H. Aller. 322 pp. John Wiley & Sons, Inc., New York, 1956. $11.00. *Reviewed by C. C. Kiess, National Bureau of Standards.*

Although the pioneering investigations of Sir William Herschel, Lord Rosse, Sir William Huggins, and others made known a century and more ago the existence and nature of the gaseous nebulae, it is to the researches of the past 25 or 30 years that we owe our understanding of these vast objects and their importance in the evolution of our galactic system. An extensive literature dealing with this recent observational and theoretical work is scattered among many scientific journals and other publications. This material has now been sifted, summarized, and arranged in logical sequence by Professor Aller in this first book in the English language to give a connected and authoritative account of the gaseous nebulae.

Those unfamiliar with the terminology of modern astrophysics will not find the book easy reading. However, the general reader, as well as the specialist, may read with profit and understanding the first two chapters describing the types of nebulae and the methods of observing them, and also those parts of the third chapter dealing with their distances and dimensions. The remainder of the third chapter discusses the spectra emitted by the nebulae. The five subsequent chapters deal, in turn, with the physical processes in the nebulae, the forbidden radiations that they emit, the associated hot stars that irradiate them, their structures and internal motions, and lastly the characteristics of the diffuse gaseous clouds associated with interstellar matter. To understand these chapters requires a knowledge of atomic physics and the laws governing the interchange of energy with matter. How these principles are applied to the interpretation of the nebulae is described in detail. As an aid in clarifying the text a well-selected set of plates, diagrams, and tabulated data accompanies each chapter. Also appended to each chapter is a long list of literature citations which enhance the value of the