Should one devote space to compilations of data?

Since the last edition of the *Handbuch,* physics writing has expanded so that we are bombarded continually with reviews, surveys, and tabulations of data. Most of these appear as journal articles—a form befitting their ephemeral status. The lifetime of a compilation is now not 25 years but at most 3 or 4 years. Of more lasting importance are the excellent books we now have on many special topics.

The papers which made the earlier *Handbuch* a classic were those which presented thorough discussions of principles and ideas, on dynamics, thermodynamics, and electromagnetic theory. In particular, the papers of Pauli and Bethe served (and still serve) as the prime texts for quantum mechanics. The new edition has preserved these beautiful articles and added some new ones of comparable caliber, but the chopping up of many subjects has made the *Handbuch* resemble, in places, a handbook of formulas and tables, with cross references from one incomplete presentation to another.

I can offer no good solution to the encyclopedists' dilemma.

The principal article in the present volume is by G. Laukien, on high-frequency nuclear resonance spectroscopy. It gives a thorough, self-contained presentation of a whole new field which has developed since 1945. The discussion of solutions of the equations of motion is excellent. Circuits and experimental techniques are compared and criticized. Especially good is the discussion of precision measurements of the proton moment. The article concludes with a tabulation of nuclear moments.

For lack of space, I shall only enumerate the other, shorter articles included in the present volume: "Atomic masses of nuclides," by A. H. Wapstra; "Determination of atomic masses by microwave methods," by S. Geschwind; "Determination of nuclear spins and magnetic moments," by F. M. Kelly; "Isotope shifts," by L. Wilets; and "Determination of nuclear quadrupole moments," by C. H. Townes.

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Agricultural Botany. N. T. Gill and K. C. Vear. Duckworth, London, 1958 (order from Macmillan, New York). viii + 636 pp. Illus. $12.

To cover in a not too voluminous textbook such widely ranging subjects as plant breeding, crop improvement, agricultural taxonomy, weed control, and plant diseases, the authors were forced to spread treatment of the subject matter rather thin.

The concise but illuminating chapter on plant genetics and the very informative chapter on crop diseases will be welcome to the general reader. However, where more specific matters, such as the classification and description of farm crops, are involved, the book will appeal to the student of British agriculture, as it deals in a very exhaustive way with crops of economic importance to that country, but it will not be found adequate by students of non-European, especially American, agriculture. To devote only five lines to discussion of the genus *Nicotiana* (page 219) and four lines to the genus *Saccharum* (page 292), and to omit all mention of the genus *Gossypium,* to give but a few examples, diminishes the usefulness to the American reader of an otherwise well-written book.

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Robert Boyle and Seventeenth-Century Chemistry. Marie Boas. Cambridge University Press, New York, 1958. viii + 240 pp. $5.50.

Ten years ago, Marie Boas published her doctoral thesis, *Robert Boyle and the Corpuscular Philosophy* (Cornell University, 1949); a revised version appeared in *Osiris* [**10**, 412 (1952)]. With this background, and after additional studies of the Boyle papers in the Royal Society library, Boas now presents a profound yet very readable book on the chemical work of Robert Boyle. Starting with a detailed biography, the author goes on to explain what chemistry was and why Robert Boyle set himself the task of showing "that chemistry was a respectable part of natural philosophy, and that it could contribute to the advancement of natural philosophy as a whole" (page 68). "Alone among natural philosophers professing a particulate theory of matter, Boyle was a chemist using chemical evidence to support his theory" (page 75).

Chapter 3 is a fine exposition of the historical background, with an outstandingly clear account of the Aristotelian theory of forms and qualities. Yet this chapter, like some of the four chapters that follow, is marred by a kind of critical attitude which measures Boyle's achievement against our "better knowledge" of today, and which applies a sort of teleological thinking, as if Boyle were a "predecessor" in a real sense (page 141 and elsewhere). This attitude makes Boas sometimes quite impatient with her hero. Why did he not continue when he was so close to discovering the real nature of the supposed conversion of water into earth upon long boiling in a glass vessel? He knew and described all the principles of the experiments, but he left it to Lavoisier to apply them! Why did he not follow through in his discussion of the elements; why did he remain skeptical instead? Why did he spread his activities so far, when he should have concentrated on what the author believes he should have pursued? Boyle "had not thoroughly learned the fact that it is better to look for limited answers first" (page 107). Such dramatization seems out of place in a historical study. Would it not be better, because more realistic and reasonable, to ask whether men of the 17th century, or at least of Boyle's kind, needed the broad approach to be creative?

In discussing the famous passage from *The Sceptical Chemist* (1661) in which Boyle tells what he means by "Elements," Marie Boas points out that the difference between the concepts of elements then and now must be realized, "and this scholars have not clearly done" (page 96). It may be dramatic but it is not very gracious to make such a condemning general statement. The author makes several statements of this kind; she would have done better to omit them, unless she could go into specific details.

After raising these objections, I am happy to return to the many great merits of this book. It presents the most important of Boyle's thoughts and experiments in historical depth, with many quotations from printed and from unpublished material. Even those who believe they know "their" Boyle will find much enlightenment here, and those who are interested in the evolution of the corpuscular theory, in the relationship between ideas and experiments, or in the intimate picture of a creative mind, whether of the 17th century or any other, will be greatly stimulated by Boas' story, told in the somewhat "rambling and repetitious" (page 212) way of Robert Boyle himself.

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Sewerage and Sewage Treatment. Harold E. Babbitt and E. Robert Baumann. Wiley, New York; Chapman and Hall, London; ed. 8, 1958. viii + 790 pp. Illus. $10.75.

The impact of a new and younger author is evident in this latest edition of a book which has served sanitary engineering well since 1922. A number of changes are evident, in particular the inclusion of more of the modern industrial waste treatment processes and discussion of some of the newer concepts of activated sludge. The presentation of principles of biochemical oxidation and anaerobic fermentation is still somewhat weaker than the student and teacher would like to see.