lished in the *Philosophical Transactions*, Part II., 1879. Unlike the volume of papers of Professor Tait, noticed above, this volume of the papers of Professor Reynolds has both a table of contents and an index.

Every one interested in the progress and in the diffusion of science will hope that the 'liberality of the Syndics of the University Press,' under whose auspices these and similar volumes have appeared, will continue to challenge admiration and commendation by the republication of additional collections.

R. S. W.

Kleiner Leitfaden der praktischen Physik. By F. Kohlrausch. Leipzig, B. G. Teubner. 1900.

Even the teachers of physics in America are so familiar with the original 'Leitfaden' that a review of this abridgment may well be essentially a comparison. The term Leitfaden (leading strings) expresses so well what is necesssary in a laboratory that it is to be regretted that we have no English equivalent. As the preface of the smaller book indicates, the larger later editions of the original have become at once a book of instructions and of reference, and has suffered as do all books which grow in that way. The new material is seldom well combined and coordinated with the old. In the new book the author has commenced all over again and distributed the matter consistently.

It is called a *smaller* guide and yet it is necessary to make a detailed comparison in order to discover that some thirty-four paragraphs have been either omitted or considerably condensed and simplified. It is, however, still a very respectable university course in physical laboratory work, and any student who thoroughly masters it will be found well equipped for advanced work. It in no sense can be called an elementary manual. It does not involve mathematics higher than algebra and simple geometry and trigonometry, logarithms and sines, cosines, etc., are assumed. More diagrams and illustrations are used than heretofore and this seems to be a real improvement. A picture book is undesirable, but well chosen diagrams and diagrammatic sketches are a great help to the beginner. This has long been recognized in light and electricity and should be judiciously extended.

Condensation is too often opposed to simplification, but in this case little or nothing of the original clearness seems to be lost in the rearrangement. Nevertheless some good hard thinking and strict attention will be required if the student is to get full benefit.

A chapter on the C. G. S. system of units is placed at the very beginning, and is necessarily very brief, and, although very important, may well be used as matter for reference from time to time as the units arise rather than to be learned at the outset.

Considered from the point of view of the teacher in the general physical laboratory, this book may well supplant the earlier treatise and relegate it to the shelf with other books of reference, and to the advanced special laboratories. It is perhaps well to warn those less familiar with the subject and with German idiom that many words which are identical with the English are used in a different sense; *e. g.*, hydrometer, in English is equivalent of araeometer, but Kohlrausch applies it to the communicating tubes used for densities of liquids. In fact in the chapter on the absolute units it would be essential that a student have the technical English equivalents, and even then some of the German units seem to be superfluous repetitions, and it should be always left clearly impressed upon the mind that 'work,' for example, is always work and always measured in the same unit no matter how the work may be accomplished; and similarly with other units.

The sections on light and especially on electricity and magnetism are very good and complete. The diagrams in the electrical measurements leave nothing to be desired and make one regret that the author did not see fit to illustrate the other subjects with the same liberality and good judgment.

A few useful tables and a good alphabetical index contribute largely to the usefulness of the book, which will be welcomed by every laboratory instructor in physics in college or university.

W. Hallock.