

The commission expects to complete its labors and report in full to the Congress at Stockholm, in 1916. When the various reports and special articles are published in full, they will give a comprehensive cross-sectional view of the teaching of mathematics as it exists to-day.

ERNEST W. PONZER.

*Taschenbuch für Mathematiker und Physiker.* Edited by FELIX AUERBACH and RUDOLF ROTHE. 2ter Jahrgang, 1911. Teubner, Leipzig und Berlin. ix + 567 pp.

POCKET and hand books of more or less ambitious size have been in use by engineers, astronomers, and others for a long time. The book under review is the second volume—the first appeared in 1909—of a series of pocket books planned along similar lines for the daily use of mathematicians and physicists. The two sciences are combined in one book because they naturally have much in common, and the 1911 edition also covers in part other fields of science.

It may seem a novel, and certainly an ambitious, project to publish each year a volume which shall remain a reference book and yet not be a duplicate in great part of former volumes issued. It may also be questioned if a series of such separate books would make reference easy. There might also be a question of the number of pockets required. However, while the project might not appeal to an American publisher, it must be said that the firm of Teubner has, as usual, done its part with its usual standard of excellence.

The articles are, as might be expected, very much condensed; in fact in many places definitions and references to books which are authorities in the fields under consideration suffice. The results given are always more than formulas alone, though it would be quite impossible to have treatises on the many subjects considered. Take the case of mathematics, pure and applied. There are 56 articles by various authors covering 180 pages. Among these such subjects as Mengenlehre, quadratic forms, theory of numbers, etc., are included for pure mathematics, while the theories of probability, approximations, and vector analysis are discussed in the section on applied mathematics.

Many parts of mechanics are treated. The tables of logarithms and trigonometric functions given seem totally inadequate. Astronomy is touched upon to the extent of

inserting the calendar for 1911 and an article on the determination of the orbits of planets and comets.

The part devoted to physics starts with a most excellent article by Willy Wien, of Würzburg, which is almost popular in nature and yet so fundamental in treatment as to be worth many a perusal. The various fields of physics are covered by articles and many tables of constants and coefficients, admirable for reference, are included. Fundamental principles expressed in mathematical language abound. In fact, throughout the book the authors, owing to the lack of space, cannot elaborate much.

An article on radioactivity by Greinacher, of Zurich, is of the same character as the one on relativity by Willy Wien.

Several articles on chemical subjects are included; the fields of technology touched upon are those dealing with the theory and design of electrical machinery. All are treated from the viewpoint of the mathematics in the case.

Of the special articles we mention the obituary notice of the late Minkowski by Hilbert and Weyl, of Göttingen, and the article on the present tendencies in the teaching of mathematics in Germany by Lietzmann, of Barmen.

For both the fields of mathematics and physics fairly complete lists of journals, proceedings, recent books, and firms dealing in apparatus are given at the end of the book. A mortuary record for 1909–1910 and a list of teachers in the Hochschulen of Germany are added. Of course, a complete index closes the volume.

ERNEST W. PONZER.

*Non-Euclidean Geometry. A critical and historical study of its development.* By R. BONOLA. Authorized English translation with additional appendices by H. S. CARSLAW. With an introduction by F. ENRIQUES. Chicago, Open Court Publishing Co., 1912. xii + 268 pp.

THE recent untimely death of Professor Bonola lends unusual interest to this book. In a review of the original Italian edition which appeared in the BULLETIN in 1910 I spoke of the desirability of having "an English edition of so valuable and interesting a work." This want is now well supplied by Professor Carslaw's translation. In a new appendix (the fifth) the translator has also materially improved the book by adding a discussion of a subject which seemed con-