

ception those changes are decided improvements, especially where the decimal division of the degree has been introduced. Among the new material are auxiliary tables for numerical integration, tables for conversion of ecliptical into equatorial elements and vice versa, for precession in rectangular coordinates, and for differential correction of orbital elements.

Of especial interest to non-astronomical users are the ten pages at the end of the volume giving a collection of formulas for interpolation, numerical differentiation and integration, tables of coefficients in interpolation formulas, a table of the probability integral, a page of mathematical and astronomical constants, and a list of logarithmic and trigonometric tables.

It is, of course, possible to suggest additional material that might have been included. Within its scope it is an excellent volume, the value of which is much enhanced by its beautiful printing.

DIRK BROUWER

*Die Mathematischen Hilfsmittel des Physikers.* By E. Madelung. 3d edition. Berlin, Springer, 1936. 13+381 pp.

The second edition of Madelung's *Hilfsmittel*, published in 1925, but still widely popular among working physicists, was rapidly losing its utility as the complexity of the mathematical tools employed by the physicist increased. The third edition represents a thorough rejuvenation; it enlarges the usefulness of the book and is likely to win for it many new friends.

The material of the book has been rearranged, and important additions have been made. Numerous items on which the reader previously had to seek elucidation in Courant-Hilbert or Whittaker and Watson may now be found adequately treated in Madelung's book. Even a short section on group theory has been included. The section on quantum mechanics, completely rewritten, contains a good summary of the principal facts, as well as sets of formulas (such as commutation rules between various operators) which are valuable to have at hand. The size of the book has grown from 283 to 381 pages.

HENRY MARGENAU

*Das Grundgesetz der Wellenfortpflanzung aus bewegter Quelle in bewegten Mittel.* By Karl Uller. Munich and Berlin, R. Oldenbourg, 1935. 138 pp.

This is a book devoted to the phenomena (mainly electro-magnetic) of wave motion in moving media. The writer does not accept the ideas of relativity and the spirit of the book may be inferred from the fact that in an appendix there are given no less than seventeen "Gegenbeweise" (whose dates of original publication extend over the interval 1910-1932) which claim to demonstrate the lack of validity of Einstein's theory. The present reviewer does not find these "proofs"—either taken singly or collectively—convincing. A single example of his inability to "go along" will have to suffice. On page 31 the author "proves" the commutativity of "local" and "substantial" time differentiations, but an examination of the "proof" makes it clear that the local time-rate of change of velocity is not taken into account.

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