

Elemente der Vector-Analysis. Von A. H. BUCHERER. 2te Auflage, Leipzig, B. G. Teubner, 1905. viii + 103 pp.

SINCE the first edition of this book, two years ago, there have appeared several books on vector analysis and yet a second edition of this one is called for. This is an indication of the rapidly spreading use of vectorial methods in physics and a testimony to the completeness and compactness of Bucherer's little book. As the first edition was recently reviewed in the BULLETIN,* it will merely be necessary to point out the changes in the new edition. The Heaviside-Föppl notation has been abandoned for that of Lorentz and Abraham—an evident effect of the usage of the Encyclopädie. A few sections have been inserted here and there—one on division of vectors, another on the motion of an electron; but generally speaking the increase of twelve pages is due to minor alterations. As the author is very anxious to keep his book within small bounds he still resists the temptation to enter on the study of linear vector functions. So many authors do this same thing that the use of linear functions in the theory of elasticity and light, where they are a great convenience, is seriously hampered.

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THERE have been no changes in the *Annuaire* this year to call for special remark. The notices are all devoted to eclipse literature, with special reference to the phenomenon which occurred last August. M. G. Bigourdan, however, goes into much detail on the question of the different kinds of observations which can be made during the few minutes duration of a total eclipse of the sun. To professional astronomers this summary will be found useful as containing in a handy form facts and ideas with which they are familiar, and to amateurs it will be of equal value as showing and explaining easily the many observations which it is possible for them to undertake and carry through with success. In a second article the same writer gives a brief account of the numerous expeditions which were made last summer to observe the eclipse. M. Janssen contributes an article on his own share of this work in Spain.

In reading through these articles in the *Annuaire* during the