

It is hardly necessary to remark that such a brief presentation of the subject cannot be critical in its nature. To some extent this defect is remedied by the brief bibliography at the end, and by a list of source material.

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*Methodologisches und Philosophisches zur Elementar-Mathematik.* Von G. MANNOURY. Haarlem, P. Visser Azn., 1909. 276 pp.

THERE appear from time to time, and in various countries, works of more or less merit that relate to the border line or the neutral ground between mathematics and philosophy, not attempting to eradicate existing boundaries, but seeking to show the relations that continually appear when one considers the two regions. We find the same thing on the other side of mathematics, where it borders upon the various physical sciences, and at the present time this region is particularly in the educational limelight. From the standpoint of the lover of pure science the former domain is the more interesting and important, while to him whose interests are chiefly in the utilities the latter has more significance.

Among the writers in our language who have of late contributed most successfully to the study of the borderland of philosophy and mathematics Bertrand Russell is perhaps the best known. In France M. Couturat has taken a prominent position, with the late lamented Poincaré writing with equal vigor in both regions. In Italy the writings of Peano, Pieri, and Veronese are well known, and other countries have contributed their quota to the study. It is, therefore, a helpful work that Dr. Mannoury has undertaken, to compile the views of various leading contributors to the study, while at the same time setting forth his own.

The work is divided into two parts, the first having to do with the foundations of arithmetic considered in its broadest sense, and the second with those of geometry. Under the former are considered in order the concepts of unity and multitude; of number, finiteness and infinity; of the distinctive fundamental principles of arithmetic; of the extension of the number concept and the principle of permanence; and of the irrational. As is often the case with continental writers the principle of permanence is attributed to Hankel, whereas Peacock introduced it in his Algebra nine years before Hankel