BOOK REVIEWS

Enciclopedia delle matematiche elementari e complementi con estensione alle principali teorie analitiche, geometriche e fisiche. Loro applicazione e notizie storico-bibliografiche. Vol. 3. Ed. by Luigi Berzolari. Milan, Hoepli. Part 1, 1947, xii+966 pp. 2600 lire; part 2, 1950, xx+1040 pp. 3800 lire.

The first Encyclopedia of Elementary Mathematics was the popular three-volume work of H. M. Weber (1842–1913) and J. Wellstein (1869–1919), *Encyklopädie der Elementar-Mathematik*, first published in 1903–1907; it went through several editions.

Already in a 1909 session of the Society Mathesis there were advocates for the preparation and publication of an Italian Encyclopedia of Mathematics, but it was nearly a score of years later before the project actually took tangible form. One may, however, regard as a sort of preliminary presentation of Encyclopedia topics the remarkably successful work edited by F. Enriques (1871–1946), *Questioni riguardanti le matematiche elementari*, in two large volumes, 1912–1914. The volumes, in which numerous specialists wrote on the various topics, were appreciably enlarged in the third edition, a dozen years later.

But finally, in 1930, under the editorship of Luigi Berzolari (1863–1949), Giulio Vivanti (1859–1949), and Duilio Gigli (1878–1933), appeared the first part of the first volume of *Enciclopedia delle matematiche elementari*; the second part was published in 1932, both parts (each with its own author index) making a volume of nearly 1100 pages. This volume, devoted to arithmetic, computation, algebra, and analysis, by 9 authors, was the only one of the *Enciclopedia* previously reviewed in this Bulletin (vol. 38 (1932) pp. 156–157). The general editorial plan of this volume was also carried out in the second. Only the more fundamental theorems were proved, but there is a constant wealth of bibliographic references where further information may be gleaned.

The second volume, in two parts, 1937–1938, of over 1200 pages and by 16 authors, was devoted to topics in geometry. Gigli had then died and it was the last one in which Vivanti appeared as joint editor.

Of the third volume, 1947–1950, Berzolari was the sole editor, but he died before the final printing of the great second part of the volume was published. In this part is a brief biographical sketch of the editor and the frontispiece is his portrait. The volume is dedicated to varied

applications of mathematics, pure and applied, to their history, and to didactic questions. The bibliographic references are not quite as full as in the earlier volumes, especially in connection with some of the monographs, but they are still valuable.

The contents of part 1 of this volume are as follows: Giovanni Giorgi, *Systems of units and measures*, pp. 1–37; Paolo Straneo, *General theory of dimensions in physics—its characteristic applications*, pp. 39–97; G. Giorgi, *Methods of vector calculus in space—critical and comparative remarks*, pp. 99–124; G. Giorgi, *Calculus of matrices*, pp. 125–166; Attilio Palatini, *Rational mechanics*, pp. 167–249; Ermenegildo Daniele, *Graphical calculus and graphical statics*, pp. 251–293; Mariano Pierucci, *Classical physics*, pp. 295–506; Luigi Gabba, *Cosmography and a sketch of celestial mechanics*, pp. 507–538; Gino Giotti, *Geometrical optics*, pp. 539–585; Rocco Serini, *Crystallography and crystallographic physics*, pp. 587–703; Gino Cassinis and Luigi Solaini, *Geodesy and topography*, pp. 705–774; Attilio Talatini, *Theory of relativity*, pp. 775–819; Paolo Straneo, *Matter, radiation, and quantum physics*, pp. 821–950; *List of authors cited*, pp. 951–962; *Errata*, pp. 963–964.

The contents of part 2 are as follows: Ugo Casina, *Numerical approximations*, pp. 1–191; Filippo Sibirani, *Calculus of probability*, pp. 193–244; Corrado Gini, *Statistical methods, the measure of collective phenomena*, pp. 245–321; Tommaso Boggio, *Financial mathematics*, pp. 323–409; T. Boggio and Fernando Giaccardi, *Actuarial mathematics*, pp. 411–480; Michele Cipolla (1880–1947), *Mathematical recreations*, pp. 481–538; Ettore Bortolotti (1866–1947), *History of elementary mathematics*, pp. 539–750; Francesco Severi and Fabio Conforto, *Character and directions of modern mathematics*, pp. 751–813; Mario Gliozzi, *History of physical thought*, pp. 815–883; Luigi Brusotti, *Didactic questions*, pp. 885–973; Giovanni Giorgi, *Appendix. On the foundations of geometry*, pp. 975–1014; *List of authors cited*, pp. 1015–1038. Giorgi's appendix is simply a second edition of three conferences held at the University of Rome in 1912 and published in *Bollettino della Mathesis* for 1912. At various points Bortolotti's history will be highly suggestive for future writers, especially in directions where he had carried on personal research.

To the completion of the *Enciclopedia* 49 authors—all of them distinguished specialists—contributed during the 20 years of its publication, and it is indeed most worthy of a place on a shelf of every university library. Almost every mathematician would be sure to find something of interest in this admirably edited work.

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