

ENCICLOPEDIA ELEMENTARI

Enciclopedia delle Matematiche Elementari a cura di L. Berzolari, G. Vivanti e D. Gigli. Milan, Hoepli. Volume 1, Part 1, 1930, xvi+450 pp.; Volume 1, Part 2, 1932, xvi+609 pp.

The preparation of an Italian encyclopedia of elementary mathematics was approved by the Society Mathesis as early as 1909, and the project was then viewed with favor also in other countries so that it seemed desirable to publish a German edition contemporaneously with the original. Active preparation was begun at once and in 1916 the proposed publication was announced in my *Historical Introduction to Mathematical Literature*, page 279, as well as in other places. Various obstacles, including the World War, delayed the publication so that the first volume, which is devoted to analysis, was only recently completed after being brought up to date by the authors of the articles contained therein. The remaining two volumes are to treat geometry and applied mathematics respectively. The latter volume is expected to include also a discussion of the teaching and the history of mathematics.

The twenty main headings of the present volume, with the number of pages devoted to each of these subjects and the authors of the articles, are as follows: *Logic*, (75), A. Padoa; *General arithmetic*, (126), D. Gigli; *Practical arithmetic*, (52), E. Bortolotti and D. Gigli; *Theory of numbers and indeterminate analysis*, (68), M. Cipolla; *Progressions*, (17), A. Finzi; *Logarithms*, (42), A. Finzi; *Mechanical calculus*, (28), G. Tacchella; *Combinatory calculus*, (9), L. Berzolari; *Elements of the theory of groups*, (51), L. Berzolari; *Determinants*, (30), L. Berzolari; *Linear equations*, (13), L. Berzolari; *Linear substitutions and linear, bilinear and quadratic forms*, (28), L. Berzolari; *Rational functions of one or more variables*, (37), O. Nicoletti; *General properties of algebraic equations*, (59), O. Nicoletti; *Equations of the second, third, and fourth degree, and other particular algebraic equations, systems of algebraic equations of elementary type*, (57), E. G. Togliatti; *Methods for the discussion of problems of the second degree and remarks on some of the third and fourth degree*, (63), R. Marcolongo; *Limits, series, continued fractions, and infinite products*, (45), G. Vitali; *Elements of infinitesimal analysis*, (101), G. Vivanti; *Relations between the theory of aggregates and elementary mathematics*, (11), G. Vivanti; *The analytic function from an elementary point of view*, (29), S. Pincherle.

Each of the two parts of this volume closes with an author index, but the volume contains no subject index. It contains an unusually large number of references to sources and hence it is very useful to those interested in the history of elementary mathematics. The large amount of space devoted to such subjects as infinitesimal analysis and the theory of groups exhibits the fact that modern developments receive considerable attention and that the authors do not share the view that the developments of elementary mathematics were practically completed at the close of the seventeenth century. On the contrary, they point out the well known fact that many of the developments in modern advanced mathematics extend into the elements of our subject and throw new

and useful light on these elements. Fifty years ago not many mathematicians would have been so bold as to predict that in 1931 an encyclopedia of elementary mathematics would devote more than fifty pages to algebraic group theory, as is done in the present work.

This work differs widely from the only other large modern encyclopedia of elementary mathematics, by Weber and Wellstein. It is much less in the form of a treatise on the subjects concerned, but it aims to prove the most fundamental theorems and to give abundant references to places where the proofs of others can be found, especially the earliest ones. By limiting itself to the elements, the exposition becomes comparatively brief, and this enables the reader to gather here with comparative ease the main facts relating to a wide range of subjects. The subject which is treated at the greatest length is general arithmetic, and the subject to which the least number of pages is devoted is combinatorial calculus. The work is especially useful to the younger students of our subject who desire to become acquainted with the main elements of the various fields of mathematics before entering deeply into any one of them. It should also be very useful to teachers of secondary mathematics who can thereby find a large amount of modern material and of historical data relating to the subjects which they are teaching.

Near the beginning of each of the two parts of the present volume there appears a list of mathematical publications with the abbreviations therefor used in the body of this work. The second part contains 155 such publications but only 10 of these are American. The most conspicuous of the missing ones is the Proceedings of the National Academy of Sciences, which now contains a large number of mathematical articles. On page 410 and in the index of Part 1 there appears the name F. R. Moulton instead of J. F. Moulton, and on page 19 of Part 2, the date of Ruffini should be 1799 in place of 1798. On page 43 of this part it is stated that the natural numbers form an infinite abelian group when they are combined by multiplication. This error was, however, corrected, even before it was made, on page 33, note 77. The same error appears also in the first edition of volume 2 of Weber's *Lehrbuch der Algebra*, as well as in many other places. On page 314 and in the index the name J. Kempner should be replaced by A. J. Kempner. The number of such oversights is fortunately relatively small, so that the volume as a whole can be heartily recommended. It would be very desirable to have a similar work in English notwithstanding the fact that a considerable portion of the modern mathematical language is universal and hence English speaking students of mathematics can use this work without much language trouble.

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