

## CAJORI ON MATHEMATICAL NOTATIONS

*A History of Mathematical Notations.* By Florian Cajori. Two volumes. The Open Court Publishing Company, September, 1928, and March, 1929. xvi+451 pp.; xvii+367 pp. Per volume, \$6.

This work is a much more ambitious undertaking than merely to trace the historical development of mathematical notations now in use. The author states that his endeavor has been "to do justice to obsolete and obsolescent notations, as well as to those which have survived and enjoy the favor of mathematicians of the present moment." This enlarged program accounts for the appearance of two substantial volumes where a single and smaller volume might, perhaps, have been expected.

Volume 1 deals with notations in elementary mathematics, in three divisions: Numeral symbols and combinations of symbols, pages 2-70; Symbols in arithmetic and algebra, pages 71-400; Symbols in geometry, pages 401-431. In the first division, 45 pages are given to descriptions of the mathematical notations of the Babylonians, Egyptians, Phoenicians and Syrians, Hebrews, Greeks, Early Arabs, Romans, Peruvians, Aztecs, Maya, Chinese and Japanese, and the remaining 25 pages to the history of the Hindu-Arabic numerals. In the second division, the first 158 pages present the notations of more than 50 individual writers, representing many different nationalities, and the remaining 172 pages give a topical survey of the use of notations in various operations and relations of elementary arithmetic and algebra.

Volume 2 treats of notations, mainly in higher mathematics, considering them in four divisions: Topical survey of symbols in arithmetic and algebra (advanced part), pages 1-141; Symbols in modern analysis, pages 142-314; Symbols in geometry (advanced part), pages 315-326; Teachings of history (as related to mathematical symbolism), pages 327-350.

The two volumes constitute a notable contribution to the growing collection of American books on the history of mathematics. They seem to the reviewer to be the most valuable and the most scholarly work Professor Cajori has yet written. Both volumes should be in every college library and the first volume in every high-school library.

In spite of its great excellence, the work seems to be lacking in some respects. Even a casual reader would be likely to notice the scant attention paid to geometry. This neglect may be due chiefly to the nature of the subject so far as elementary geometry is concerned but the same can scarcely be said of the various fields in higher geometry. Only 30 of the 431 pages in volume one and only 12 of the 350 pages in volume two are devoted to geometry. Of the 126 illustrations in the two volumes only one small cut appears in a part given over to geometric notation, although several illustrations showing geometric notation are given elsewhere (in connection with individual notations, vol. 1, pp. 203, 207, 209, 210). In view of the fact that the second volume contains 71 fewer pages than the first (which does not appear to be bulky) the reader who is particularly interested in geometry is not likely to feel that the