was neither one of the "earliest" nor yet one of the "greatest mathematicians" of England.

In spite of the introduction which should have been prepared by one more familiar with the history of mathematics the work is highly to be commended, as eminently worthy a place in mathematical libraries.

Invitation is extended to subscribe to a guarantee fund to cover the cost of plates for Part III, Astronomy. American libraries are urged to send subscriptions to Part III to R. T. Gunther at Magdalen College, Oxford.

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Geschichte der Elementar-Mathematik in systematischer Darstellung. By Johannes Tropfke. Berlin and Leipzig, Vereinigung Wissenschaftlicher Verleger. Bd. I: *Rechnen.* 1921. vi + 177 pp. Bd. II: *Allgemeine Arithmetik.* 1921. 221 pp. Bd. III: *Proportionen. Gleichungen.* 1922. 151 pp. Bd. IV: *Ebene Geometrie.* 1923. 238 pp.

The first edition of Tropfke's *Geschichte der Elementar-Mathematik* was published in 1902–1903, and was reviewed by J. W. A. Young in this BULLETIN.* The four volumes under review form part of a second edition, which is to include seven volumes, the last three being yet in press, or at least not yet available in this country. That the revision has been thoroughgoing is evidenced by the fact that the material corresponding to these four volumes occupied approximately 510 pages in the first edition, and has thus been expanded above 50 per cent; while the references to the literature in these four volumes number 4348, as compared with 1951 in the corresponding parts of the first edition.

And the advance made beyond the first edition is by no means merely quantitative. The author was fortunate in having the active assistance of G. Eneström and H. Wieleitner in the preparation of the new edition, and their names are a sufficient guarantee that no pains have been spared to make the work as complete and authoritative as possible. On nearly every page we find valuable additions to the information given in the first edition; while in several cases the point of view then adopted has been radically changed or even reversed.

To mention but a few of the changes: (1) In discussing the origins of the number system, use has been made of recent researches as to the knowledge of the Babylonians. An interesting detail is the fact (I, p. 15) that as early as 2500 B. C. the tables of Senkereh contain representations of very large numbers according to the sexagesimal system, the largest to date deciphered being $60^8 + 10 \cdot 60^7$ (= 195 955 200 000 000). (2) The history of the development of technical terms is very largely expanded. (3) The independence of the work of the Hindus is in many cases questioned or denied in the second edition where it was accepted in the first; the researches of G. R. Kaye are largely responsible for the author's change of view here. (4) The account of complex numbers (II, 79–90) is entirely rewritten and considerably enlarged. (5) The discussion of the development of the theory of parallels (IV, 53–60) is a considerable improvement over that in the first edition, while it must be confessed that it still leaves something to be de-

* Vol. 12 (1905), pp. 138–140.