

The next regular meeting of the Association will be held at the University of Minnesota under the presidency of Professor A. A. Michelson, of the University of Chicago. Professor E. H. Moore, of the University of Chicago, was elected vice-president and chairman of Section A; Professor G. A. Miller, of the University of Illinois, continues as secretary. Professor E. R. Smith, of the Brooklyn Polytechnic Preparatory School, was elected member of the sectional committee for five years.

G. A. MILLER,
Secretary of Section A.

SHORTER NOTICES.

Rara Arithmetica. By DAVID EUGENE SMITH, Teachers College, Columbia University. Second edition. Boston, Ginn and Company, 1909. xviii + 507 pp. Cloth. Price, \$4.50.

THE title page of this splendid volume modestly states that "the work is a catalogue of the arithmetics written before the year 1601 with a description of those in the library of George Arthur Plimpton of New York." Another appropriate title might be, A brief history, on the bibliographical plan, of the genesis and content of sixteenth century arithmetic.

As a bibliography this work is more extensive than any of its predecessors, and is nearly complete for the formative period between 1472 and 1601. There are mentioned over five hundred and fifty different works, which number swells nearly to twelve hundred by the inclusion of the various editions. About four hundred and fifty of the different books are genuine arithmetics, while the others deal partially with algebra, astrology, or the calendar. In determining the significance of this number one thinks at once of De Morgan's *Arithmetical Books*, the best of the earlier authorities on the subject, and recalls that this work gives only seventy arithmetics printed before 1600. The list in Professor Smith's *Rara Arithmetica* is much more extensive than those of Graesse, Hain, and Copping, and contains more Italian titles than are given by Riccardi in his *Bibliotheca Mathematica Italiana* and more German ones than are included by Murhard in his *Bibliotheca Mathematica*.

But this work is more than a scholarly, well edited digest of all the earlier bibliographies; it is the result of the examination

of the original works in so far as they are extant and are to be found in the libraries of Europe or America. In particular, it is an extensively illustrated catalogue of the arithmetical collection of Mr. Plimpton. This collection is already well known to many scholars, and it will now become known to other students of mathematics wherever Professor Smith's work may circulate. It is the third great private collection of rare arithmetical books of the sixteenth century and surpasses its predecessors, the Libri and Boncompagni libraries, in respect to this period. It contains over three hundred arithmetics, while De Morgan with the aid of the British Museum was able to consult less than one hundred of those printed before 1601, including all editions. It is probable that Mr. Plimpton's library does not lack more than a dozen or so extant sixteenth century arithmetics that went through two editions.

The work is arranged chronologically by first editions, but this classification is supplemented by indices of reference, both alphabetical and geographical, making readily accessible every important fact in the volume. In describing a specimen, the first edition is always taken, if available, and discussed under these heads: title, colophon, description, editions. The description includes the size of the page and the text in centimeters; the number of blank, numbered, and unnumbered pages; the style of numbering; and the place of publication and date. The title pages of all the works of special value are reproduced in fac-simile, besides many pages and selections that show the evolution of arithmetic; and in addition to these there are twelve plates of particular interest to the student of early mathematical literature.

But Professor Smith's work is more than a catalogue, it is a condensed history of arithmetic during its formative period. The numerous notes not only point out the significant features of the specimens under discussion, but they form a comparative study of the subject from many points of view, for example, the comparison of the arithmetic of the Latin schools with that of the trade schools, the comparison of the arithmetics of different nations, and the relation of abacus reckoning to figure reckoning. The following excerpt illustrates this feature of the work:

"This work (Scheubel's Arithmetic) is the production of a scholar rather than a man conversant with the demands of business. While Scheubel tried to write a mercantile arithmetic, the result was far removed from the needs of the common people.

It carries the work in subjects like the roots so far that the ordinary Rechenmeister could not have used it. Moreover, it is written in Latin and is much more extended than the work of Gemma Frisius, so that it appealed neither to the business school nor to the ordinary classical school. A great deal of attention is given to exchange, the rule of three, and the extracting of roots of high order. Attention is also given to problems which would now form part of algebra, and there is a brief treatment of geometry from the standpoint of mensuration.

“While Scheubel is not much appreciated to-day, he was really ahead of his time. He tried to banish the expression ‘rule of three’ and to substitute ‘rule of proportion.’ His explanation of square root is in some respects the best of the century, and he dismisses with mere mention the ‘duplatio’ and ‘mediatio’ of his contemporaries. He extracts various roots as far as the 24th, finding the binomial coefficients by means of the Pascal triangle a century before Pascal made the device famous.”

As to its usefulness, this is a work which no bibliographer of rare books will fail to consult. It will become an authoritative source for writers of mathematical history and the standard reference book on sixteenth century arithmetic for scholars in mathematics everywhere. It would be wasteful of the reviewer’s space to speak of the author, because his special fitness is known to practically every student of the history of mathematics, and his scholarship stamps with authority all of his productions.

LAMBERT L. JACKSON.

Coordinate Geometry. By HENRY BURCHARD FINE and HENRY DALLAS THOMPSON. New York, The Macmillan Company, 1909. 8vo. 8 + 300 pp.

It was generally considered by the writers of the earlier American text-books on analytical geometry and by those who then taught the subject that the material for a first course consisted of the chief metrical properties of the separate species of conic sections. There is a marked similarity between the text in these books and the easier portions of Chapters I, II, VI, X, XI, XII of Salmon’s *Treatise on Conic Sections* (edition of 1869). Within recent years, however, there has been a marked tendency among some of the teachers to regard the acquisition of these isolated facts about parabolas, ellipses, and