

*Histoire des Sciences Mathématiques dans l'Antiquité Hellénique.* By Gino Loria. Paris, Gauthier-Villars, 1929. iv+215 pp. Price 30 fr.

This brief survey of the mathematical achievements of the ancient Greeks is one of the series *Science et Civilization* edited by M. Maurice Solovine, who is also the editor of the equally important series *Les Maîtres de la Pensée Scientifique*, a collection of original sources. Both he and the publishers deserve the thanks of scientists and the general reading public for having placed this material in a form that can be procured at a moderate price. Our organizations for the advancement of adult education would do well to consider such means to aid their efforts.

In the present work Professor Loria, whose important treatises on the history of mathematics are well known, has condensed into about two hundred pages the story of Greek mathematics from the time of Thales to that of Heron of Alexandria. He has very properly prefaced this story by a chapter on the "cradles of mathematical thought," namely, on the work of the Assyro-Babylonians and the Egyptians. His subsequent chapters relate to (Chap. II) the origin and first phase of development of Greek mathematics, (III) the golden age of Greek geometry, (IV) the contemporaries and immediate followers of the great mathematicians of Greece, (V) Greek arithmetic (theory of numbers), (VI) Greek astronomy, and (VII) the Greek spirit in modern mathematics.

Naturally such a wide field can only be covered in so few pages by placing the emphasis upon the leading features. In this Professor Loria shows once more that he not only writes with a facile pen but selects his material with enviable discernment. He shows his familiarity with some of the recent discoveries of archaeology and takes the sensible view that the interchange of ideas between peoples is not a monopoly of modern transport but has always been a force for the spread of knowledge. He calls attention to such racial peculiarities as the use of very large numbers in Babylon and the general repugnance to this use in the Greek schools; to the knowledge which the Babylonians had of the relations of the sides of a right triangle and the absence of geometric proof of any such statements, but fails to mention the recent discoveries respecting the angle in a semi-circle or the rule for the quadratic; and in general he selects the characteristic features with respect to each country and era. His statements concerning the Rhind Papyrus need revision on account of the recent appearance of the editions of Professor Peet and Dr. Chace. While he mentions the Moscow Papyrus, he naturally could not speak of it with any authority since it is yet to be made known in any complete way.

Readers will be interested in the assertion that Pythagoras more than any other man deserves the title of the "fondateur de la glorieuse famille des mathématiciens"; that the tradition of his proof of the right-triangle relation is probably founded on fact; and that this proof was substantially the one which we now state in algebraic form. Such items, historical or conjectured, characterize the passages devoted to all the leading Greek mathematicians, thus giving a popular presentation of their work.

The chapter that will attract the reader of elementary mathematics most is the one referring to the influence of Greek methods on modern theories.

Among the later writers whose works show marked evidence of this influence Professor Loria mentions Copernicus, whose indebtedness to Aristarchus is well known; Snell, who was called "Eratosthenes Batavus"; Descartes, who built on the work of Apollonius, but developed a new method; Chasles and Steiner, who were deeply indebted to Pappus and his predecessors; the mathematicians of the seventeenth century who owed so much to Eudoxus and Archimedes; and the arithmeticians and algebraists who were inspired by the work of Diophantus. The list could, of course, be greatly extended, but not readily in a work of this nature.

That a publication of this size should give an exhaustive treatment of any special topic is not to be expected. What the book pretends to be is a popular presentation of the chief features of Greek mathematics, and this it is.

DAVID EUGENE SMITH

*The Chequered Career of Ferdinand Rudolph Hassler, First Superintendent of the United States Coast Survey.* By Florian Cajori. Boston, The Christopher Publishing House, 1929. 245 pp.

This book provides a vivid and interesting account of the life and work of the founder of the U. S. Coast Survey. Professor Cajori follows Hassler's steps from his birth in Switzerland in 1770 through his early geodetic operations to his migration to America in 1805, professorship at West Point in 1807-1809, at Union College 1810-1811, in Europe purchasing scientific instruments for the United States Government 1811-1815, initiating the Coast Survey in 1816-1818, surveying the northeastern boundary line in 1818-1819, engaging in various occupations in 1820-1830, and finally in Government employ, as Superintendent of Weights and Measures and director of the Coast Survey, the crowning work of his life, from 1830 to his death in 1843.

Hassler's experiences form an instructive example of the tribulations and ill-success that often attend a man of pure science who lacks the practical experience and tact to accomplish results in the world of affairs which his ability and originality would otherwise certainly bring to fruition; and on the other hand, these same experiences illustrate the shortsightedness of the "practical" men of affairs, who also failed to accomplish as much as they would have done, particularly in the early years of the Coast Survey, had they possessed the imagination to overlook the oddities and short-comings of this man who although living in a different world could have done his part in bridging the gulf between, had he received sympathetic assistance.

It is a pity that the usefulness of this interesting little volume should be marred by its unsatisfactory outward form. Paper and type are inferior, there are numerous misprints (on p. 97, l. 6 from the bottom, "Madison" should be "Monroe", an editorial error) and the arrangement of chapters and paragraphs leaves much to be desired. In translations from the German, Teutonic idioms have been permitted to creep in, as on pp. 21, 22, 29. But after all, these are external matters; the book is an interesting and useful addition to our knowledge of American science and American life a hundred years ago.

R. B. McCLENON