

SHORTER NOTICES.

A Short History of Astronomy. (The University Series.) By ARTHUR BERRY. New York, Scribner, 1899. xxxi + 440 pp.

IT is a sufficiently difficult and thankless task to write a history of any science at the present time, and the difficulty is all the greater when the subject is as old as astronomy. Anyone engaged in a special line of research will always feel some interest in the history of his study quite apart from the value it may have for its advancement, but most of the sciences are of such a nature that only a slight acquaintance with their earlier history is necessary. Astronomy stands almost alone in one respect. Though, as with other sciences, its history is that of discarded *theories*, yet the *observations* made in the past, instead of being less valuable according as they were more ancient, are frequently more so, and the necessity for examining carefully the records from the earliest times has become increasingly important. A well recorded eclipse, passage of a comet, or rough measure of a star's position, may help us more in the determination of certain constants than the most careful series of observations made in recent times.

In the present volume Mr. Berry has made the first attempt to give a continuous and concise popular account of the history of astronomy from the earliest times up to the present day. He has endeavored to make it readable, to set forth the main facts in their due proportion without too great a sacrifice of details, to give sufficient indications of the literature so that one can obtain more information on special points if desired, and finally, to go as far as is reasonable into explanations so that the true nature of a discovery may be appreciated. He has, however, not been contented to make a mere compilation from the earlier works on separate parts of the history but has given a careful and well-written account of the whole subject as far as was possible within the limits set. Moreover, he has, in many cases, gone to the sources (*e. g.*, for the work of Galilei, Kepler) and studied the writings of the pioneers in the original, so that his estimates of what they achieved will have an independent value. The whole book bears evidence of a large amount of work and in spite of its modest title should take a higher rank than many of the popular volumes which appear so frequently at the present time.

The first three chapters are devoted to astronomy from the earliest times to the beginning of the sixteenth century. The author has confined his account almost entirely to the East, omitting the astronomy of the Egyptians, the Chaldeans and the Chinese, owing partly to the difficulty of obtaining first-hand information and partly to the unsettled state of the interpretations which Oriental scholars put on the records which have come down to us. We hope that this omitted portion may in the future be described by as able a hand. Whole chapters are devoted to Copernicus, Tycho Brahe, Galilei, and Kepler, showing how the subject was gradually emancipated from mere speculation and emerged into a science in which observations were collected and theories tested by means of them.

Of the discoveries of Newton and his immediate successors, Mr. Berry naturally gives a full account. From this time, the subject has been divided into two parts, gravitational and descriptive. The former may be said to consist almost entirely in the complete verification of the law of the inverse square coupled with the laws of motion. In later times, the latter has been subdivided into observational, physical, and descriptive astronomy, and the author finds it necessary to adopt these subdivisions for the eighteenth and nineteenth centuries. A full chapter is devoted to Herschel as the first man to systematize observational astronomy. The description of the work of the last century is necessarily much condensed as a large number of partly isolated subjects have to be discussed; but, wherever possible, the main idea involved in every advance has been given.

ERNEST W. BROWN.

Die Mathematiker und Astronomen der Araber und ihre Werke.
(Abhandlungen zur Geschichte der mathematische Wissenschaften mit Einschluss ihrer Anwendungen. X Heft.)
Von HEINRICH SUTER. Leipzig, B. G. Teubner, 1900, ix + 278 pp.

A CATALOGUE of over five hundred names of mathematicians and astronomers does not give promise of much interest to a reader. But anyone who takes the trouble to dip into Dr. Suter's volume will be pleasantly disappointed if he merely expects to find a list of authors and writers with the titles of their works. To read through such a book is of course out of the question, even for a reviewer, and yet merely to put it on the shelf ready for a chance reference