

It is unnecessary to say that Professor Heiberg was the first to give a critical and modern study to the works of Archimedes, and that, with the exception of Sir Thomas Heath, there is no one now living who combines such a perfect knowledge of Greek, Latin, and the mathematics of the classical period.

DAVID EUGENE SMITH.

*Archimedes' Werke.* Mit modernen Bezeichnungen herausgegeben und mit einer Einleitung versehen von Sir THOMAS L. HEATH. Deutsch von Dr. FRITZ KLIEM. Berlin, 1914. xii + 477 pp.

As stated in the preceding review, there was abundant reason to justify Professor Heiberg in preparing a new edition of the works of Archimedes, and the same may of course be said concerning a work like that of Sir Thomas Heath. In the case of the latter's well-known treatise the lack of reference to the Methodus in the first edition has been overcome in part by the publication\* of a pamphlet giving an English translation from the original Greek text. There is, however, good reason for a second edition of the work by Sir Thomas Heath, and it is to be hoped that he will find time to supply this need. Meantime the German edition by Dr. Kliem is most welcome. While the translator, in preparing this edition, has, in the main, followed the English text with fidelity, he has not hesitated to amplify it, with the author's permission and assistance, so as to include all the recent discoveries, and to add a number of footnotes which are calculated to assist the student. Thus in Chapter I we have a reference to Förster's article on Pheidias the astronomer, and some mention of the Stomachion as in the Heath supplement of 1912; in Chapter II, a reference to the codices used by Heiberg in his second edition, with information concerning the finding of the Codex rescriptus Metochii Constantinopolitani and the nature of the text, and reference to the recent literature on el-Biruni's knowledge of the work of Archimedes on the circle; and in the following chapters the same policy has been pursued.

In Chapter VII, for example, Dr. Kliem has amplified the treatment somewhat, particularly with reference (page 149) to the new matter found in the Methodus. He has, however, omitted Chapter VIII, on the terminology of Archimedes. This is perhaps justifiable from one point of view,

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\* Cambridge, 1912.

but the chapter is a valuable one and the omission means a loss to German readers.

The chief variation in the text of the works of Archimedes as given by Heath lies in the inclusion of the recently found Methodus and fragment of the Stomachion. The former will appear in volume III of the new Heiberg edition, and the latter is already in volume II.

Dr. Kliem has done an excellent piece of work. The book is well printed, better indeed than the English edition, and it will bring to the German scholars a piece of work of the best scholar in England in the field of Greek mathematics. Reviewers so commonly refer to the lack of an index that it seems almost hopeless to get publishers to realize the annoyance that is caused by the want of such a time-saving feature. In neither the English nor the German edition is an index given, although in a work of this kind, where a scholarly introduction contains many details to which a table of contents cannot refer, it would be of great value.

DAVID EUGENE SMITH.

*Geheimnisse der Rechenkünstler.* P. MAENNCHEN. Mathematische Bibliothek, Bd. XIII. Leipzig, B. G. Teubner, 1913. iv + 48 pp. Price, 80 Pfennige.

AGAIN have Drs. Lietzmann and Witting made all lovers of mathematics their debtors for an entertaining little volume in their new series of handbooks. They have set out to give to the world a series of popular essays on the non-technical phases of mathematics, and thus far they have been successful in showing to their readers the brighter side, sometimes the less serious side, but always an interesting side of the science. To this rule the recent monograph by Professor Maennchen is no exception. The very title is attractive, and the dialogue between the Publikum and the Rechenkünstler, while very Teutonic, is cast in a pleasing style that keeps the reader's interest throughout.

The nature of the work can best be understood by a few quotations, but the interest of the reader will doubtless be fostered if the reviewer refrains from giving the explanations which Dr. Maennchen sets forth in the text.

The Publikum asks for the cube root of a perfect cube of five figures, whereupon the Rechenkünstler asks for the last three figures and is told that they are  $\dots 683$ . He at once states that the cube root is 27.