DIOPHANTOS OF ALEXANDRIA; A STUDY IN THE HISTORY OF GREEK ALGEBRA. [CAMBRIDGE-1885]

Published @ 2017 Trieste Publishing Pty Ltd

ISBN 9780649562657

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Edited by Trieste Publishing Pty Ltd.
Cover @ 2017

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Trieste

London: C. J. CLAY AND SON,
CAMBRIDGE UNIVERSITY PRESS WAREHOUSE,
AVE MARIA LANE.

CAMBRIDGE: DEIGHTON, BELL, AND CO.
LEIPZIG: F. A. BROCKHAUS.

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OF

GREEK ALGEBRA.

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EDITED FOR THE SYNDICS OF THE UNIVERSITY PRESS.

Cambridge:

AT THE UNIVERSITY PRESS.

1885

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PRINTED BY C. J. CLAY, M.A. AND SON,
AT THE UNIVERSITY PRESS.

PREFACE.

THE scope of the present book is sufficiently indicated by the title and the Table of Contents. In the chapter on "Diophantos' notation and definitions" several suggestions are made, which I believe to be new, with regard to the origin and significance of the symbols employed by Diophantos. A few words may be necessary to explain the purpose of the Appendix. This is the result of the compression of a large book into a very small space, and claims to have no independent value apart from the rest of my work. It is intended, *first*, as a convenient place of reference for mathematicians who may, after reading the account of Diophantos' methods, feel a desire to see them in actual operation, and, *secondly*, to exhibit the several instances of that variety of peculiar devices which is one of the most prominent of the characteristics of the Greek algebraist, but which cannot be brought under general rules and tabulated in the same way as the processes described in Chapter V. The Appendix, then, is a necessary part of the whole, in that there is much in Diophantos which could not be introduced elsewhere; it must not, however, be considered as in any sense an alternative to the rest of the book: indeed, owing to its extremely condensed form, I could hardly hope that, by itself, it would even be comprehensible to the mathematician. I will merely add that I have twice carefully worked out the solution of

every problem from the proof-sheets, so that I hope and believe that no mistakes will be found to have escaped me.

It would be mere tautology to enter into further details here. One remark, however, as to what the work does not, and does not profess to, include may not be out of place. No treatment of Diophantos could be complete without a thorough revision of the text. I have, however, only cursorily inspected one MS. of my author, that in the Bodleian Library, which unfortunately contains no more than a small part of the first of the six Books. The best MSS. are in Paris and Rome, and I regret that I have had as yet no opportunity of consulting them. Though this would be a serious drawback were I editing the text, no collation of MSS. could affect my exposition of Diophantos' methods, or the solutions of his problems, to any appreciable extent; and, further, it is more than doubtful, in view of the unsatisfactory results of the collation of three of the MSS. by three different scholars in the case of one, and that the most important, of the few obscure passages which need to be cleared up, whether the text in these places could ever be certainly settled.

I should be ungrateful indeed if I did not gladly embrace this opportunity of acknowledging the encouragement which I have received from Mr J. W. L. Glaisher, Fellow and Tutor of Trinity College, to whose prospective interest in the work before it was begun, and unvarying kindness while it was proceeding, I can now thankfully look back as having been in a great degree the "moving cause" of the whole. And, finally, I wish to thank the Syndics of the University Press for their liberality in undertaking to publish the volume.

T. L. HEATH.

11 *May*, 1885.

LIST OF BOOKS OR PAPERS READ OR REFERRED TO, SO FAR AS THEY CONCERN OR ARE USEFUL TO THE SUBJECT.

1. *Books directly upon Diophantos.*

XYLANDER, Diophanti Alexandrini Rerum Arithmeticarum Libri sex..... Item Liber de Numeris Polygonis. Opus incomparabile.....Latine redditum et Commentariis explanatum..... Basileae, 1575.

BACHET, Diophanti Alexandrini Arithmeticorum Libri sex, et de numeris multangulis liber unus. Lutetiae Parisiorum, 1621.

Diophanti Alexandrini Arithmeticorum libri sex, et de numeris multangulis liber unus. Cum commentariis C. G. BACHETI V.C. et obseruationibus D. P. de FERMAT Senatoris Tolosani. Tolosae, 1670.

SCHULZ, Diophantus von Alexandria arithmetische Aufgaben nebst dessen Schrift über die Polygon-zahlen. Aus dem Griechischen übersetzt und mit Anmerkungen begleitet. Berlin, 1822.

POSELGER, Diophantus von Alexandrien über die Polygon-Zahlen. Uebersetzt, mit Zusätzen. Leipzig, 1810.

CRIVELLI, Elementi di Fisica.....ed i Problemi arithmetici di Diofanto Alessandrino analiticamente dimostrati. In Venezia, 1744.

P. GLIMSTEDT, Första Boken af Diophanti Arithmetica algebraisk Oefversättning. Lund, 1855.

STEVIN and GIRARD, "Translation" in Les Oeuvres mathématiques de Simon Stevin. Leyde, 1684.

2. *Works indirectly elucidating Diophantos.*

BOMBELLI, L'Algebra.....diuisa in tre Libri..... Bologna, 1579.

FERMAT, Opera Varia mathematica. Tolosae, 1679.

BRASSINNE, Précis des Oeuvres mathématiques de P. Fermat et de l'Arithmétique de Diophante. Paris, 1853.

COSSALI, Origine, trasporto in Italia, primi progressi in essa dell' Algebra .....Storia critica..... Parma, 1797.

NESSELMANN, Die Algebra der Griechen. Berlin, 1842.

JOHN KERSEY, Elements of Algebra. London, 1674.

WALLIS, Algebra (in Opera Mathematica. Oxoniae, 1695—9).

SAUNDERSON, N., Elements of Algebra. 1740.

3. *Books which mention or give information about Diophantos, including histories of mathematics.*

COLEBROOKE, Algebra with Arithmetic and Mensuration from the Sanscrit of Brahmagupta and Bhâscara. London, 1817.
SUIDAS, Lexicon (ed. G. Bernhardy). Halis et Brunsvigae, 1853.
FABRICIUS, Bibliotheca Graeca (ed. Harless).
ABULFARAJ, History of the Dynasties (tr. Pococke). Oxon. 1663.
CH. TH. v. MURR, Memorabilia Bibliothecarum publicarum Norimbergensium et Universitatis Altdorfinae. Norimbergae, 1786.
DOPPELMAYR, Historische Nachricht von den Nürnbergischen Mathematicis und Künstlern. (Nürnberg, 1730.)
VOSSIUS, De universae mathesios natura et constitutione..... Amstelaedami, 1660.
HEILBRONNER, Historia matheseos universae. Lipsiae, 1742.
MONTUCLA, Histoire des Mathématiques. Paris, An 7.
KLUEGEL, Mathematisches Wörterbuch. Leipzig, 1830.
KAESTNER, Geschichte der Mathematik. Göttingen, 1796.
BOSSUT, Histoire Générale des Mathematiques. Paris, 1810.
HANKEL, Zur Geschichte der Mathematik in Alterthum und Mittelalter. Leipzig, 1874.
CANTOR, Vorlesungen über Geschichte der Mathematik, Band I. Leipzig, 1880.
Dr HEINRICH SUTER, Gesch. d. Mathematischen Wissenschaften. Zürich, 1873.
JAMES GOW, A short History of Greek Mathematics. Camb. Univ. Press, 1884.

4. *Papers or Pamphlets read in connection with Diophantos.*

POSELGER, Beiträge zur Unbestimmten Analysis. (Berlin *Abhandlungen*, 1832.)
L. RODET, L'Algèbre d'Al-Khârizmi et les methodes indienne et grecque. (*Journal Asiatique*, Janvier, 1878.)
WOEPCKE, Extrait du Fakhrî, traité d'Algèbre par Aboû Bekr Mohammed ben Alhaçan Alkarkhî, précédé d'un memoire sur l'algèbre indéterminée chez les Arabes. Paris, 1853.
WOEPCKE, Mathématiques chez les Orientaux.
1. *Journal Asiatique*, Février-Mars, 1855.
2. *Journal Asiatique*, Avril, 1855.
P. TANNERY, "À quelque époque vivait Diophante?" (*Bulletin des Sciences Mathém. et Astronom.* 1879.)
P. TANNERY, L'Arithmétique dans Pappus..... (*Bordeaux Memoirs*, 1880.)
ROSEN, The Algebra of Mohammed ben Musa. London, 1831.
HEIBERG, Quaestiones Archimedeae. Hauniae, 1879.