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## *Note on the First English Euclid.*

BY GEORGE BRUCE HALSTED, *Tutor in Princeton College, late Fellow of Johns Hopkins University.*

SOME interesting questions may now be answered authoritatively, since it is discovered that Princeton possesses, and has possessed for nearly a century, perhaps longer, the identical volume from which the first translation of Euclid into English was made three hundred years ago by Sir Henry Billingsley.

The first translation of Euclid into Latin was made from the Arabic by Adelard of Bath (1130). It is related that he travelled in the East and Spain, where he obtained MSS. From the fact that this version was spread abroad on the Continent with a commentary by Campanus of Novara, it soon began to be attributed to Campanus. It was published at Venice in 1482, and was the first *printed* edition of Euclid. From this or its reprints (1491 and 1516) it has always been taught that the first version into our language was made; see for example the Introduction to Pott's Euclid, Cambridge, 1845, which states, "to Henry Billingsley, a citizen of London, is due the merit of making the first English translation of Euclid's Elements of Geometry. It was made chiefly *from the Latin of Campanus*, and was published in 1570."

There was some dispute as to the extent to which Greek was studied in England at that period, but De Morgan, by a comparison of the Greek of Gregory's Edition with the Latin of Adelard-Campanus and the English of Billingsley, arrived at the belief, in 1837, that this English translation was either made from the Greek or corrected by the Greek.

As the preface was written by the celebrated Dr. John Dee, De Morgan supposed that perhaps he might have furnished the requisite knowledge of Greek.

There seems to be a tendency to doubt Sir Henry Billingsley's erudition, for no reason that I can discover except that he was wealthy and became Lord Mayor of London in 1591.

But now for the new facts. The large folio volume above referred to, in the Library at Princeton, contains first a copy of the first printed edition of Euclid's Elements in Greek, published at Basle in 1533 by John Hervagius, edited by Simon Grynaeus. The text is that of Theon's Revision, and was for a century and three-quarters the only printed Greek text of all the books. Theon was the President of the Neo-Platonic School at Alexandria at the close of the 4th Century. He was the father of the celebrated Hypatia, who succeeded him in the Presidency, and who was assassinated by the Christians in 415.

Appended to this is a copy of the Commentary of Proclus on the First Book of Euclid, printed also at the press of Hervagius in 1533. The editor mentioned, Simon Grynaeus, is the man accused by Anthony Wood of stealing rare MSS. from Oxford. Says Wood, . . . "he took some away, and conveyed them with him beyond the seas, as in an epistle by him written to John, son of Thomas More, he confesseth."

Bound together with these works in Greek, the volume also contains the two-fold Latin translation printed at Basle by Hervagius in 1558. One is the Adelard-Campanus version, from the Arabic; the other is the first translation into Latin from the Greek, made by Zamberti from a MS. of Theon's Revision, and first published at Venice in 1505, twenty-eight years before the appearance of the Editio princeps in Greek.

At the head of this second part of the volume is an address to the reader by Philip Melancthon, dated "Wittenbergæ, mense Augusto, M. D. XXXVII."

Now, all this forms a collection exceedingly rare and valuable in itself; but what gives to this volume its special archæological interest is the fact that it belonged to Billingsley, and was his equipment for the first English Euclid. On the title-page is the autograph signature "*Henricus Billingsley,*" in a most beautiful antique hand. Throughout the volume are very numerous corrections, additions and marginal notes, all in Billingsley's peculiar and beautiful writing. I dare hazard that no Lord Mayor, since his time, has ever written so charming a hand. By reading what he has done, it immediately appears that though he had the Adelard-Campanus Latin before him, yet he gave his special work to a careful comparison of Zamberti's Translation with the original Greek, and the corrections he has actually made sufficiently prove his scholarship and render entirely unnecessary De Morgan's suppositious aid

from Dr. Dee, while, on the other hand, they establish the conclusion about the translation to which De Morgan's sagacity had led him, that "It was certainly made from the Greek, and not from any of the Arabico-Latin versions."

To the one sentence of comparison in proof of this published by De Morgan, Billingsley's autograph indications would enable me to add as many as any one desired, but suffice it to say, that the definitions of the Eleventh Book are alone entirely decisive of the matter.

PRINCETON, *January 9, 1879.*

