Henry Briggs | Encyclopedia.com

(*b*. Warleywood, Yorkshire, England, February 1561; *d*. Oxford, England, 26 January 1630)

mathematics.

Although J. Mede of Christ's College, Cambridge, wrote on 6 February 1630, "Mr. Henry Briggs of Oxford, the great mathematician, is lately dead, at 74 years of age," implying thereby that Briggs was born about 1556, it seems that he was in error. The Halifax parish register gives the 1561 date.

After a local grammar schooling in Greek and Latin, Briggs went to St. John's College, Cambridge, about 1577, and was admitted as a scholar on 5 November 1579. He received the B.A. in 1581 and the M.A. in 1585, became examiner and lecturer in mathematics in 1592, and soon afterward was appointed Dr. Linacre's reader of the physic (medicine) lecture. He had been elected fellow of his college in 1589.

Early in 1596 Briggs became the first professor of geometry at the newly founded Gresham College in London. He first worked on navigation and composed a table for the finding of the height of the pole, the magnetic declination being given. By 1609 he was in correspondence with James Ussher, later the famous archbishop of Armagh; from one of Briggs's letters we learn that he was studying eclipses in 1610. By 10 March 1615, however, he was entirely engaged in the study of logarithms, the subject for which he is renowned: "Neper, lord of Markinston, hath set my head and hands a work with his new and admirable logarithms. I hope to see him this summer, if it please God, for I never saw book, which pleased me better, and made me more wonder."

Briggs at once applied his energies to the advancement of logarithms and to lecturing on them at Gresham College. He soon proposed a modification of the scale of logarithms from Napier's hyperbolic form, a change that Napier discussed with Briggs, who went to Edinburgh for a month's visit after completing his lectures in the summer of 1616. One result of these exchanges was that Briggs saw E. Wright's translation of Napier's *Canon mirificus* through the press, Wright having died. To the work Briggs added a preface and some material of his own—"A description of an instrument table to find the part proportional, devised by Mr. Edward Wright" (1616).

Briggs's *Logarithmorum chilias prima* is dated 1617; in the preface, which mentions the recent death of Napier, the change from the hyperbolic form of logarithms is justified and the publication of Napier's *Rhabdologia* foretold. That work duly appeared in 1619, with comments by Briggs himself on the new form of logarithms and on the solution of spherical triangles.

The parts taken by Napier and Briggs in developing logarithms were described by the latter in his *Arithmetica logarithmica* (1624). The proposals there recorded do not yield common logarithms: for if R is the radius, Briggs suggested that $\log R = 0$ and $\log R/10 = 10^{10}$. Napier, having abandoned the hyperbolic form in which

proposed an improvement whereby $\log 1 = 0$ and $\log R = 10^{10}$. Later, Briggs replaced $\log R = 10^{10}$ with $\log 10 = 1$. Brigg's key words are:

I myself, when expounding this doctrine publicly in London to my auditors in Gresham College, remarked that it would be much more convenient that 0 should be kept for the logarithm of the whole sine (as in the *Canon Mirificus*), but that the logarithm of the tenth part of the same whole sine, that is to say 5 degrees 44 minutes and 21 seconds should be 10,000,000,000. And concerning that matter I wrote immediately to the author himself.

Later, however, in Edinburgh, Napier suggested to Briggs "that 0 should be the logarithm of unity and 10,000,000,000 that of the whole sine; which I could not but admit," says Briggs, "was by far the most convenient."

Briggs's edition of Euclid's *Elements* (Books I–VI), printed without the editor's name, was published in London in 1620. In the previous year Sir Henry Saville had invited Briggs to become professor of geometry at Oxford, where he took up his duties at Merton College in January 1620. In his last lecture, Saville introduced Briggs with the words, "Trado lampadem successori meo, doctissimo viro, qui vos ad intima geometriae mysteria perducet." Tactfully Briggs began his lecture course where Saville had left off, at the ninth proposition of Euclid.

His next achievement was the *Arithmetica logarithmica*, which included thirty thousand logarithms, those from 1 to 20,000 and those from 90,000 to 100,000. The work contains a dissertation on the nature and use of logarithms and proposes a scheme for dividing among several hands the calculation of the intermediate numbers from 20,000 to 90,000. Briggs even offered to supply paper specially divided into columns for the purpose. Chapters 12 and 13 of the introduction explain the principles of the method of constructing logarithms by interpolation from differences, an interesting forerunner of the *Canonotechnia* of Roger Cotes. A second edition of the *Arithmetica*, completed by Adrian Vlacq (or Flack), contained the intermediate seventy chiliads and appeared in 1628.

Vlacq also printed Briggs's tables of logarithmic sines and tangents. The responsibility for seeing this work through the press was entrusted by Briggs, when dying, to his friend Henry Gellibrand, then professor of astronomy at Gresham College, who added a preface explaining the application of logarithms to plane and spherical trigonometry. The work was published in 1633 as *Trigonometria Britannica sive de doctrina triangulorum*.

Briggs was an amiable man, much liked by his contemporaries. Unlike Napier, he scorned astrology, thinking it to be "a system of groundless conceits." His last years were spent at Merton College, Oxford, where he died. Some Greek elegiacs were written for him by his Merton colleague Henry Jacob; they end with the statement that not even death has put a stop to his skill, for his soul still astronomizes while his body measures the earth. Oughtred called him "the mirrour of the age for excellent skill in geometry," and Isaac Barrow expressed in his inaugural lecture at Gresham College the sincere gratitude of mathematical contemporaries to Briggs for his outstanding work on logarithms. The interest of this brilliant man extended to the problem of a northwest passage to the South Seas, on which he wrote a treatise (1622), and to the relative merits of the ancients and moderns.

BIBLIOGRAPHY

I. Original Works. Briggs's contributions, and the rest of Napier's *Canon mirificus*, were published at London in 1616 and reprinted in 1618; his own *Logarithmorum chilias prima* soon followed the original edition of the Canon (London, 1617). Briggs also added comments to Napier's *Rhabdologia* (Edinburgh, 1619) and edited a version of Euclid's *Elements*, Books I–VI (London, 1620), although his name did not appear as editor. His interest in a north-west passage to the South Seas was expressed in a treatise on the subject (London, 1622). A major work by Briggs was *Arithmetica logarithmica* (London, 1624); a second edition, completed by Adrian Vlacq (Gouda, 1628), contained the intermediate seventy chiliads. The relative merits of the ancients and moderns were discussed in *Mathematica ab antiquis minus cognita*, published in the second edition of G. Hakewill's *Apologie* (1630). Briggs's last work was *Trigonometria Britannica sive de doctrina triangulorum* (Gouda, 1633).

II. Secondary Literature. Works concerning Briggs are D. M. Hallowes, "Henry Briggs, Mathematician," in *Transactions of the Halifax Antiquarian Society* (1962), 79–92; Chrostopher Hill, *Intellectual Origins of the English Revolution* (Oxford, 1965), p. 38, where it is claimed that "significant though Briggs was as a mathematician in his own right, his greatest importance was as a contact and public relations man"; C. Hutton, *Mathematical Tables*, 5th ed. (London, 1811), pp. 33–37, and *A Philosophical and Mathematical Dictionary*, I (London, 1815), 254–255; F. Maseres, ed., *Scriptores logarithmici*, I (London, 1791), Ixxvi ff. (on Briggs's abacus ΠΑΤΧΡΗΣΤΟΣ and binomials, see especially p. lxviii); Thomas Smith, biography of Briggs, in his *Vitae quorundam eruditissimorum et illustrium virorum* (1707), translated into English by J. T. Foxell in A. J. Thompson, *Logarithmetica Britannica*, I (Cambridge, 1952), lxvii–lxxvii; H. W. Turnbull, a study of Briggs's work on finite differences, in *Proceedings of the Edinburgh Mathematical Society*, 2nd ser., **3** (1933), 164–170; J. Ward, biography of Briggs, in *The Lives of the Professors of Gresham College* (London, 1740), pp. 120–129, which includes a list of Briggs's writings, both published and unpublished; D. T. Whiteside, "Patterns of Mathematical Thought in the Later Seventeenth Century," in *Archive for the History of the Exact Sciences*, **1** (1961), 232–236.

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