Trigonometriae Britannicae

To the Cultivators of Mathematics
A Valediction
Henry Gillibrand

   As always, untimely and ruinous to the State of Knowledge is the death of those who produce some immortal work: would it were otherwise than considering the death of our most learned Briggs - clearly he was a source of wonder to Mathematicians of this age. Thus truly if he had lived longer, neither would Posterity have been deprived of his light so untimely, nor would the burden of producing this work have pressed so heavily upon my poor shoulders as so many millstones, if Fate had decried to spin a different web. Yet the Author must be honoured amply by this most noble Epilogue on his life's work, spent so labourously in Mathematics, and we must finish off that which was incomplete - otherwise the Graces[1] would certainly carry off this incomplete memorial to the gods - *i.e.* it would be lost to humanity. Scarcely indeed can the work with its exact numbers fall upon the shoulders of another man as upon those of our Atlas[2] friend, yet the man had grown old studying Arithmetic and Geometry. It had been his happy gift to discover brilliantly, to set forth vigorously, and to organise neatly and precisely the numbers produced, as may be confirmed from the first part of this work. But as with the picture of the Venus of Antiquity, when the untimely death of Apelles[3] left the work unfinished, no one who followed the outline already drawn was able to complete the remainder. Much less for us after such a profusion of Great Things, we would appropriate the pencil for an eternity: but God is the Wisest Governor, Apelles was called away and then it was the turn of our septuagenarian Author, with himself as it were summoned away from the earth, leaving the beginning of his incomplete work. Even for some thirty years more or less, he had been able to complete accurately this Table of Sines to fifteen places, through algebraic equations and differences which were themselves proportional to Sines themselves, that were set up from first principals. Wearied by the continued urgent demands made on him by his friends, in order that an edition of Tables together with chapters on the construction and use was considered, (which on account of the public things with which he was involved, he could hardly permit to happen) as so much of the work was done by hand with difficulty: as one might say with death induced by midwifes[4] in the labour of childbirth, so Briggs's life finished together with the end of the first book, indeed not a vestige for the making of the following book was left behind.
   And thus by the order of the Author now with the Blessed (while still alive, he was upright and reasonable about religion with me), then with the encouragement of the most distinguished and eminent of men knowledgeable of mathematics: Master Christopher Gardiner, of Haling, Esq; Master John Welles, of Deptford, Esq; Master Richard Lever, of London, Gentleman, and of others to whom I owe the most, and finally by asking that most distinguished and learned of men, Master Adrian Vlacq, who was commissioned to print the Canon and who first set up the type at his own expense [5]. I have been accruing examples for use, on account of the fine measures and precision of our Tables, following the outlines of Napier and Briggs as far as I have been able.
   I may wish to persuade readers that any errors that occur should be kindly set to rights (for with the printing done overseas I was not able to be present). For if any numbers the Tables are suspect, any change of the number in the majority of cases, can

be done by means of higher order differences, which are not difficult to investigate.
Farewell. From Gresham College, before the day of the third Calends, November, inthe
year of Grace, 1632.

Notes:

1   The three Graces were goddesses in Classical times.

2   The author portrays himself as a poor substitute for a giant, barely able to support the
load left on his shoulders by his friend Briggs.

3   A famous Greek painter, a contemporary of Alexander the Great, who lived on the
island of Cos.

4   'In 1588 (some sources give 1589) Briggs was elected a fellow of St John's College,
Cambridge, and then, in 1592, he became:-

 Reader of the Physic Lecture founded by Dr Linacre.

Thomas Linacre, born almost exactly 100 years before Briggs, had been so upset by
the fact that medicine was practiced by barbers and clergymen without proper
qualifications that he founded the Royal College of Physicians of London. The Linacre
lectureship that Briggs was appointed to was therefore a medical lectureship but, in the
same year of 1592, Briggs was also appointed as an examiner and lecturer in
mathematics at Cambridge. It certainly appears that his talents were wide ranging.'
[From the article on the life of Briggs by *J J O'Connor* and *E F Robertson*, on the
Dept. of Mathematics and Statistics, St. Andrews University, web site on the history of
Mathematics].
This early excursion by Briggs into the realms of medicine was obviously a source of
some amusement to at least one of Briggs' mathematical contemporaries, though here
it seems a little tasteless: though it indicates something of the banter and wit of Briggs'
character. Briggs of course was not free to marry, as a Professor of Gresham College.
We have to bear in mind that Gillibrand (1597 -1636) was still quite a young man of
35 years at the time of writing: sadly, he himself was to live for only a few more years.

5   Vlacq, a publisher, with his associate de Decker, a schoolmaster and surveyor, had
adapted Briggs' *Arithmetica Logarithmica* by completing the missing Chiliades,
working to 10 decimal places instead of the 14 in the original, in which case the easier
interpolation scheme of Chapter 12 could be used. Originally, de Decker had printed
these tables off for himself in Dutch in 1627 at Gouda, under the title '*Tweede Deel
Nievwe Tel-Konst ofte Wonderliicke Konstighe Tafel*' ; most of the copies were
destroyed, it appears, by Vlacq, who proceeded to publish his Latin version of Briggs'
work, with the method of calculation of the logarithms and some applications.
Unfortunately, he left out the all important chapters 12 and 13 on difference methods,
and moved other section around in the book. Briggs was not overly impressed, as he
records in this work: however, he had left the door open for such a development, as he

had invited anyone to complete the missing Chiliades in the Preface to the *Arithmetica,* though he did not have the approach adopted by Vlacq in mind.

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Mathematum Cultoribus
S.D.
HENRICUS GELLIBRAND.

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Quam immatura semper, & dammnosa Reipublicae Litterariae sit mors eorum qui immortale aliquid parant, utinam aliunde quam ex doctissemi nostri Briggii (seculi hujus Mathematici plane stuporis) sentiretur. Ita quidem nec Posteri luce hac sua orbati fuissent, neque humeris meis parum validis tantae molis incubuisset onus, aut tanta in purtexenada hac tela disparitas deprehensa foret. Quod si Autori laboriose anteactam in Mathesi vitam, hoc nobilissimo Epilogo cohonestare, si inchoatum hoc Opus absolvere contigisset, non defuissent Gratiae quae Monumentum istud auferrent atque in Caelis reponerent. Vix quidem in Alium suis numeris tam absolutum cadit Opus quam in Atlantem hunc Nostrum, Virum in Arithmeticis Geometricisque consenescentem. Cui invenire praeclare, nervose proponere, disponere concinne adeo faeliciter datum fuit, ut de inchoato hoc Opera affirmari possit, quod Antiqui de Veneris imagine quam praematura Apellis mors imperfectam reliquerat, Niminem qui secundum praescrita ab ipso lineamenta reliquum absolveret inventum fuisse; Nedum ut Nobis aeternitatis penicillum post Talem Tantumque arrogemus: Deo autem Moderatori Sapientissimo, visum est Apellem hunc Nostrum septuagenarium, in ipso quasi Operis hujus vestibulo, sibi e terris evocare. Cum enim ante annos plus minus trigenta, Canonem hunc Sinnum, ad quindecim loca, per aequationes Algebraicas, & Differentias, ipsis Sinubus proportionales, a primis fundamentis accurate extructum absolvisset, ac continuis amicorum efflagitationibus fatigatus, ut Canonis una cum constructione & Usu editionem meditaretur, (quam propter negotia publica quibus implicatus erat vix licuit) tandem Operi manum aegre admovens, in ipso, ut obstetricum more dicam, puerperii quasi nisu vitam simul cum Libro primo terminavit, ne vestigia quidem fabricae Libri secundi post se relinquens.

Iussu itaque Authoris jam Beati (Cui adhuc in vivis nihil justem & aequum denegare religio Mihi fuit;) hortatu deinde Clarissimorun ac Mathemata egregie callentium Virorum Domini Christopheri Gardineri Halingensis Armigeru, Domini Iohannis Wellesij Deptfordiensis Armigeri, Domini Richardi Leveri Londinensis Generosi & aliorum quibus plurimum debeo; Ornatissimi denique nec non eruditi Viri Domini Adriani Vlacci rogatu qui suis sumptibus Canonem Typis primo mandaverat permotus, pro modulo ac tenuitate nostra Canonis illustrationem aggressus sum, Lineamenta Neperiana & Briggiana quoad potui sequutus.

Lectores exoratas velim ut haec nostra qualiacunque sint, candide interpretentur, & errata quae occurrunt (Typographo enim Transmarino adesse non potui) emendent. Quod si in rebus majoris momenti numerus aliquis Canonicus erroris suspectus sit, poterit per Differentiarum non difficulter explorari. Valete, E Collegio Greshamensi, ante diem tertium Calendas Novembris Anno Sulutis M. DC. XXXII.